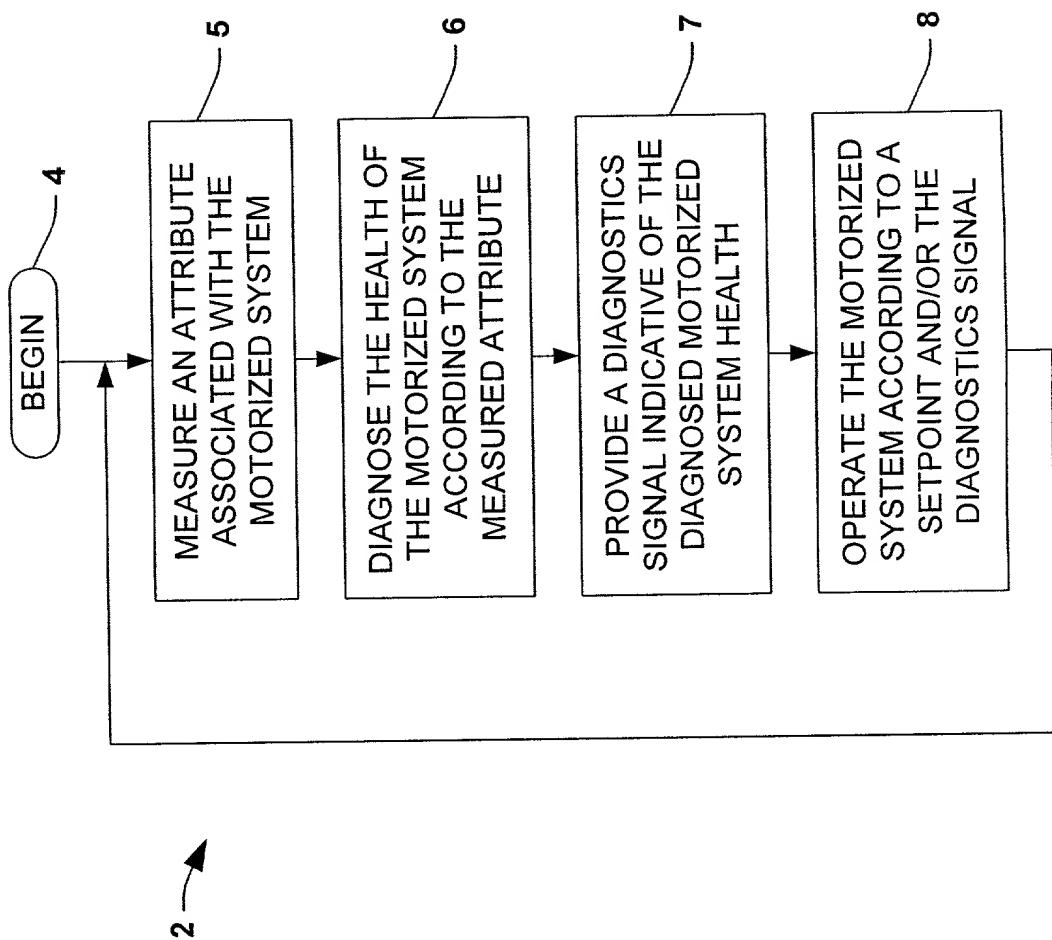
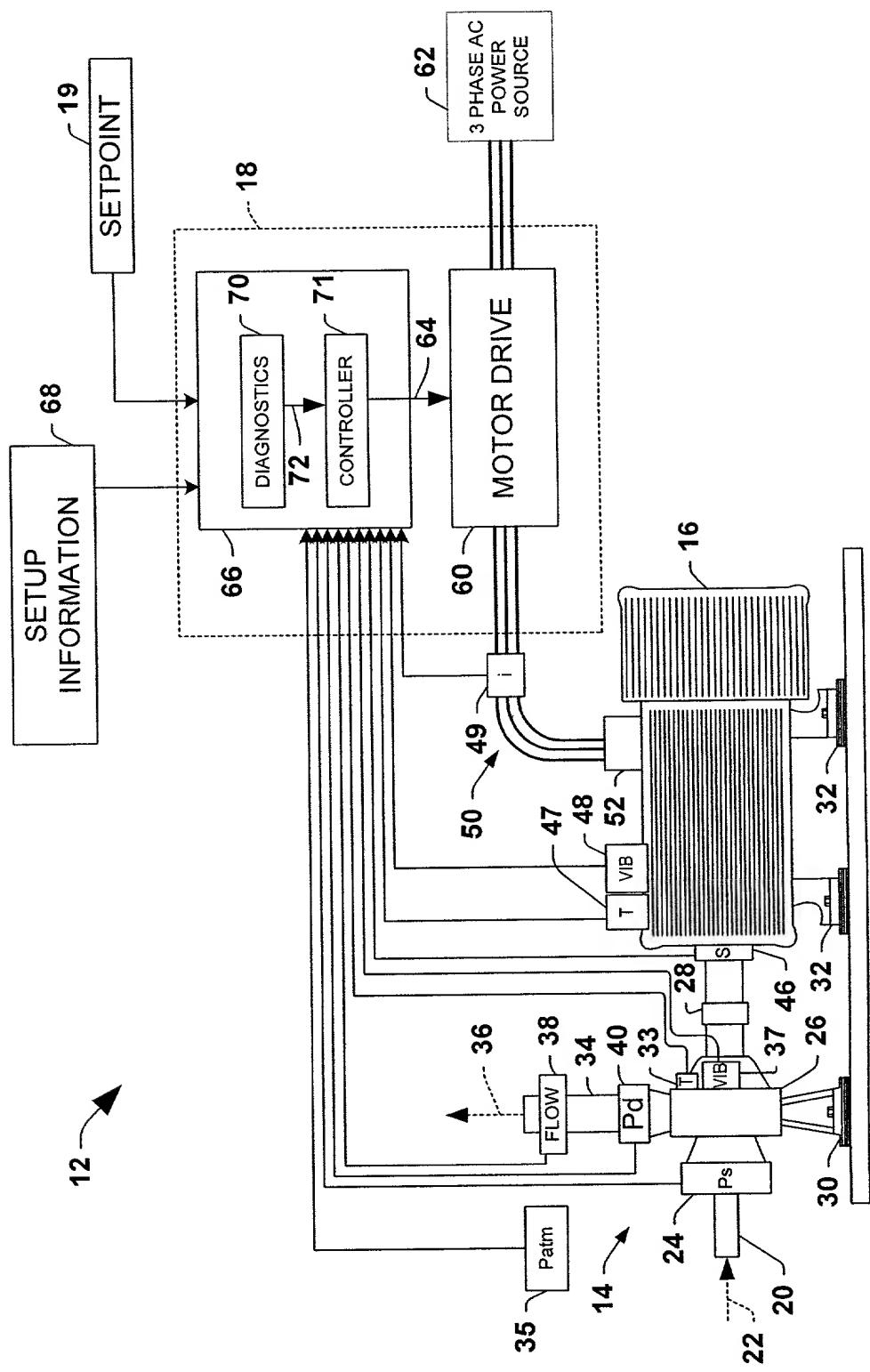


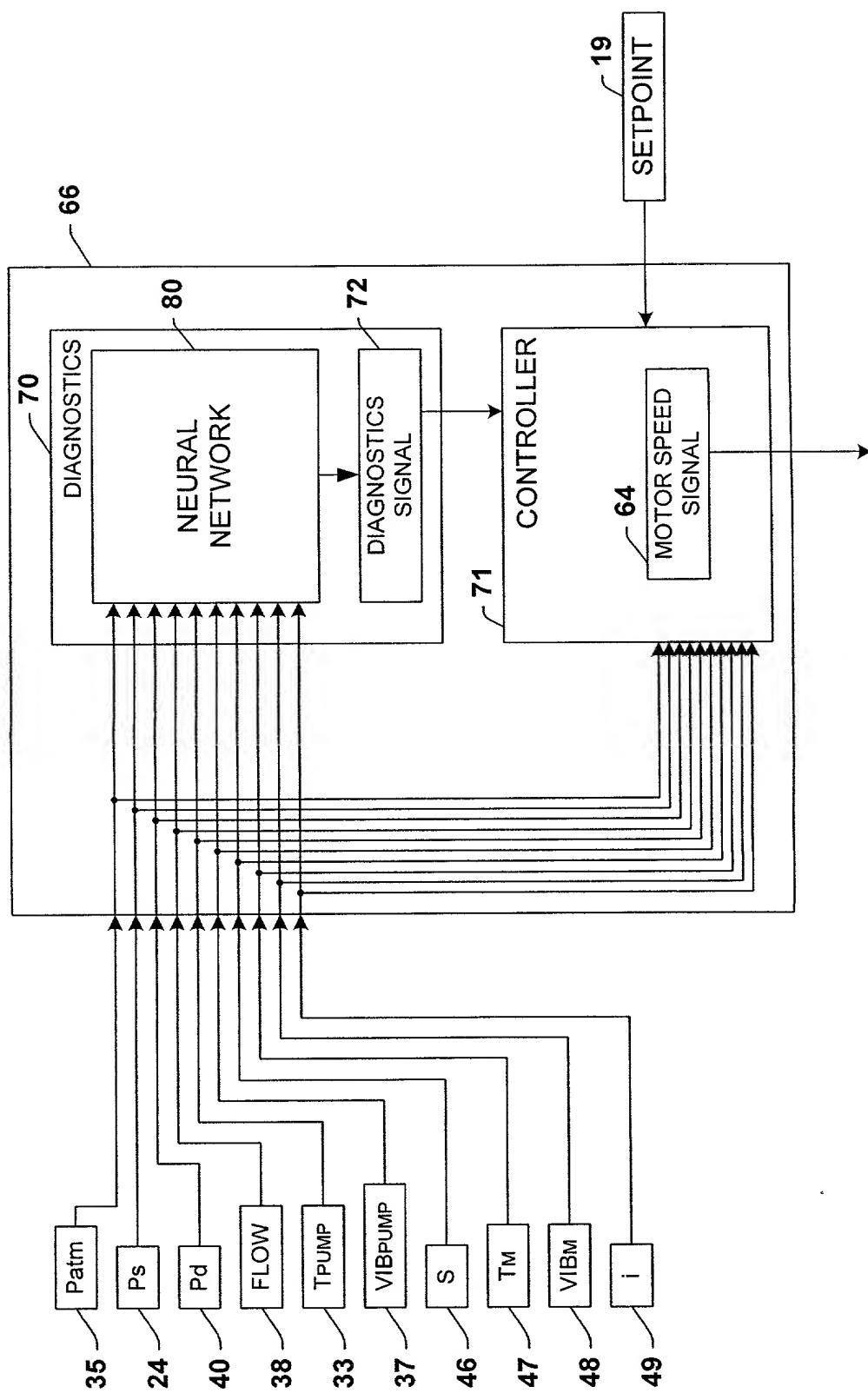
**FIG. 1**





**FIG. 2**

FIG. 3



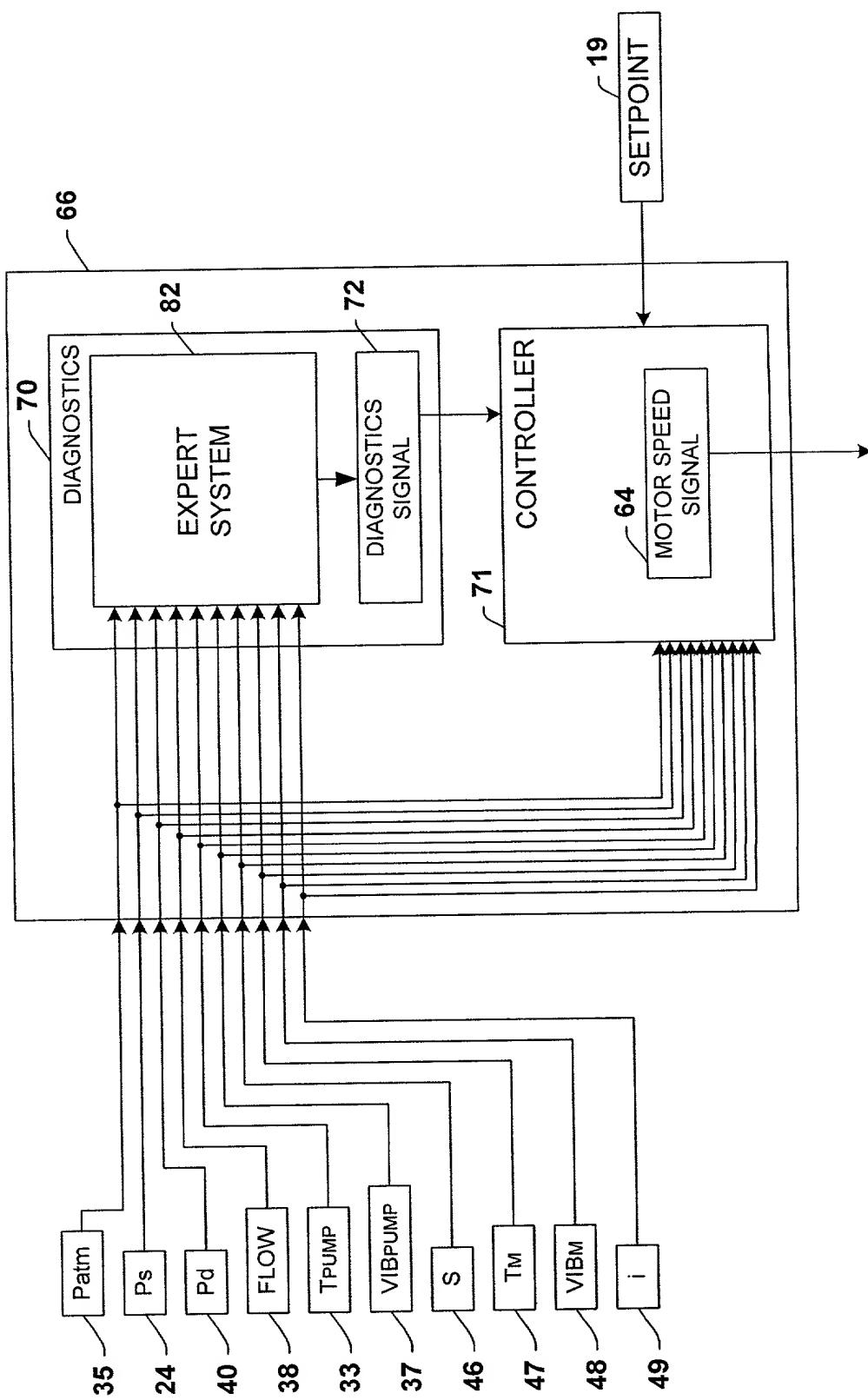
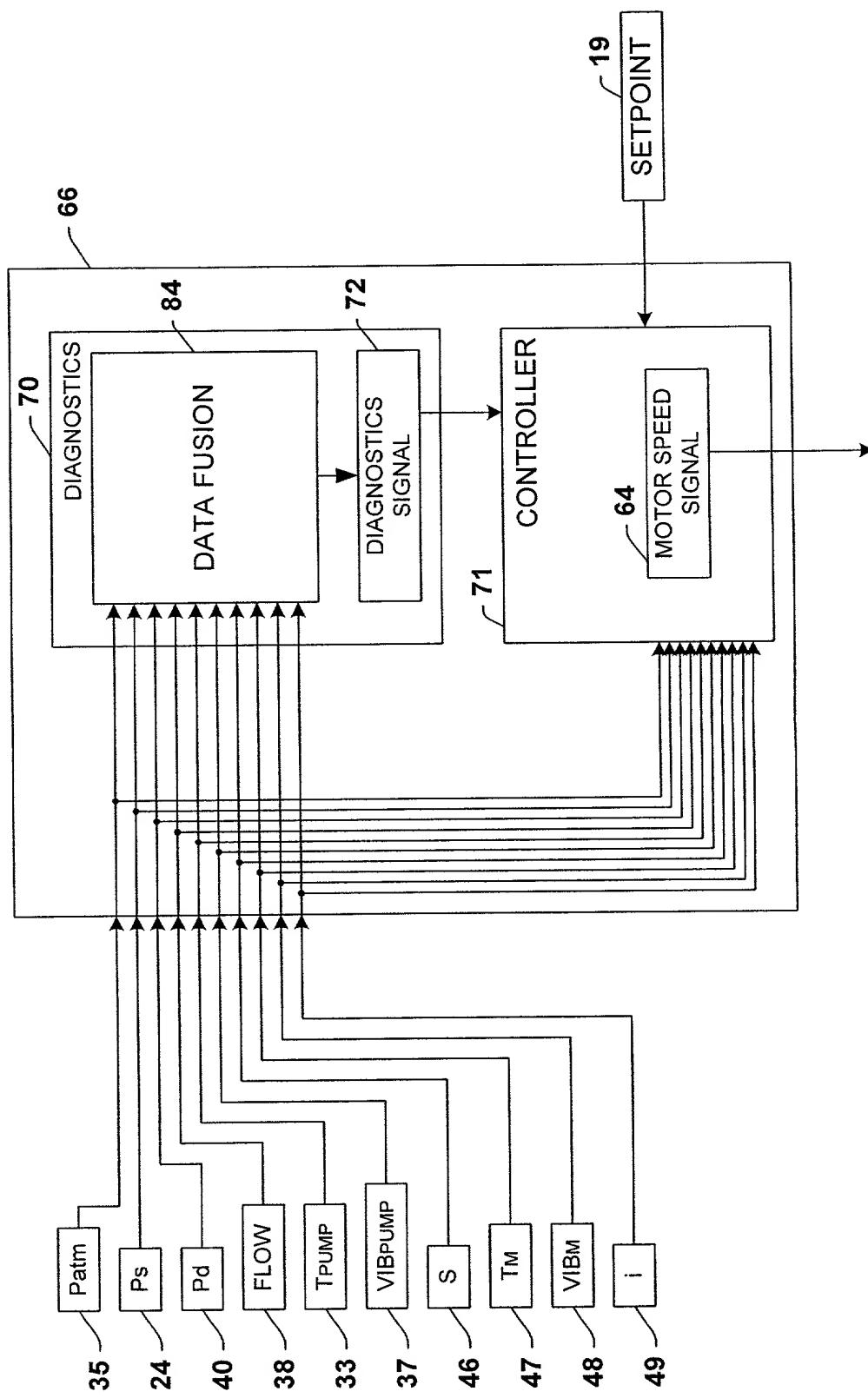
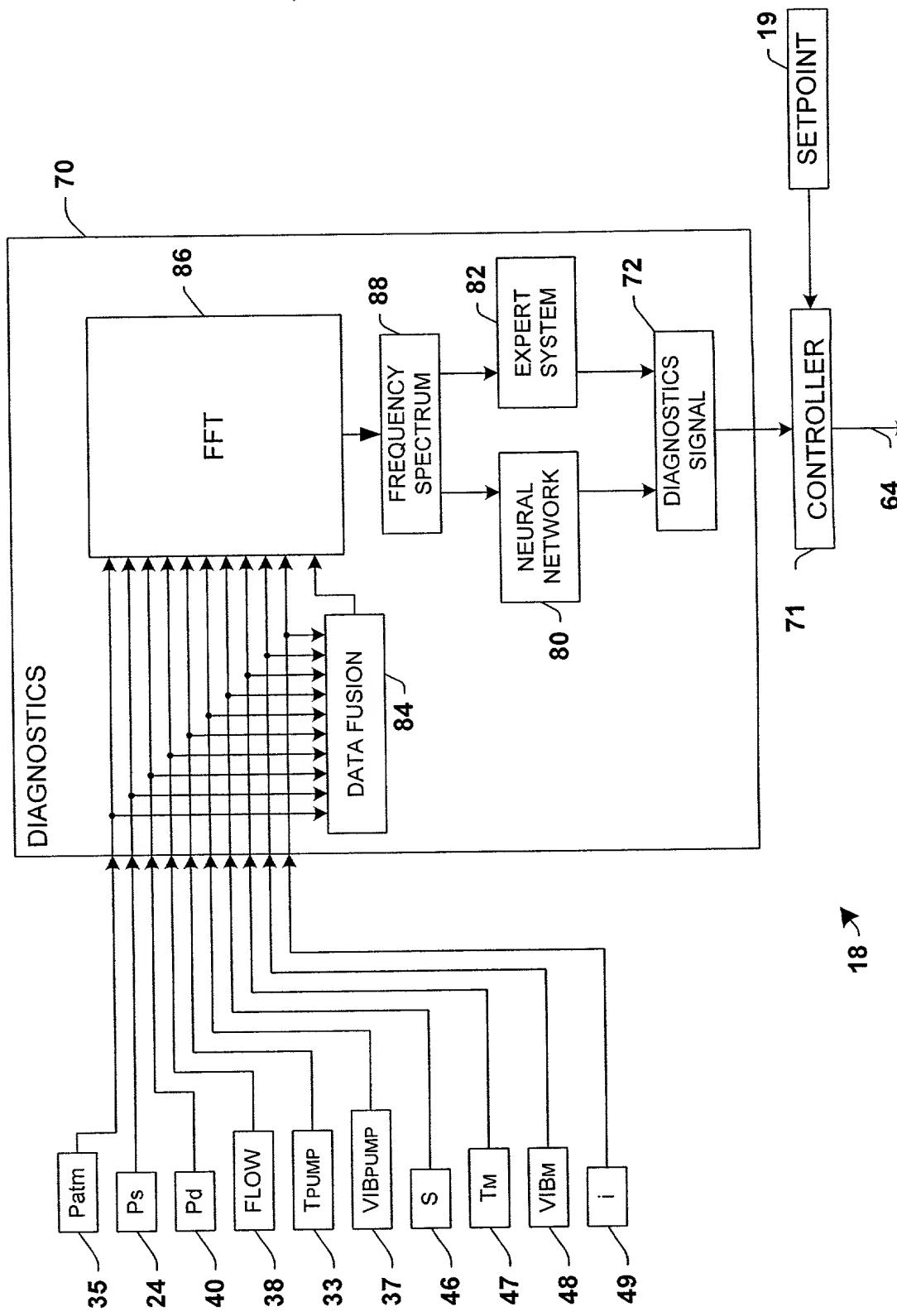


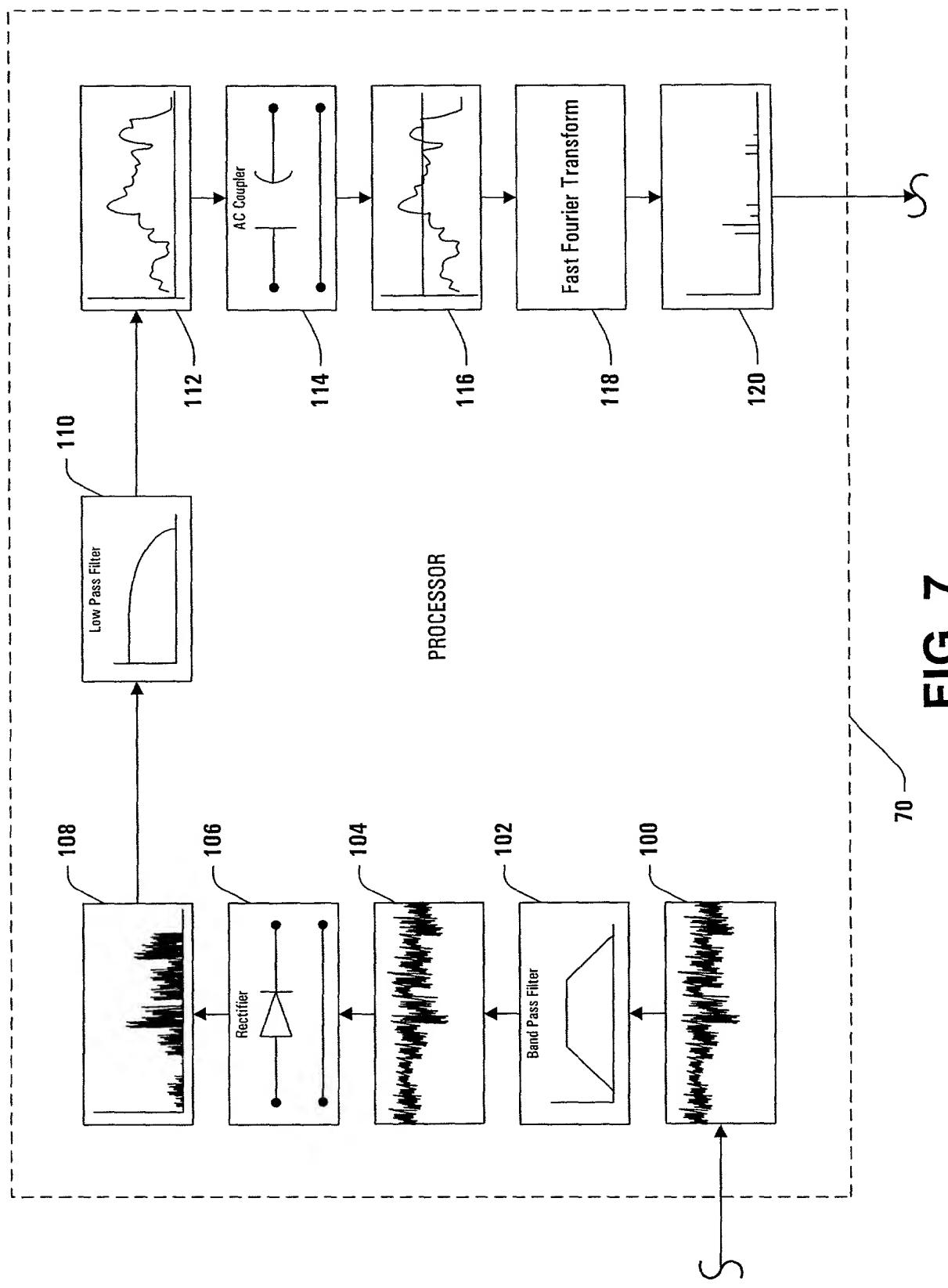
FIG. 4

FIG. 5



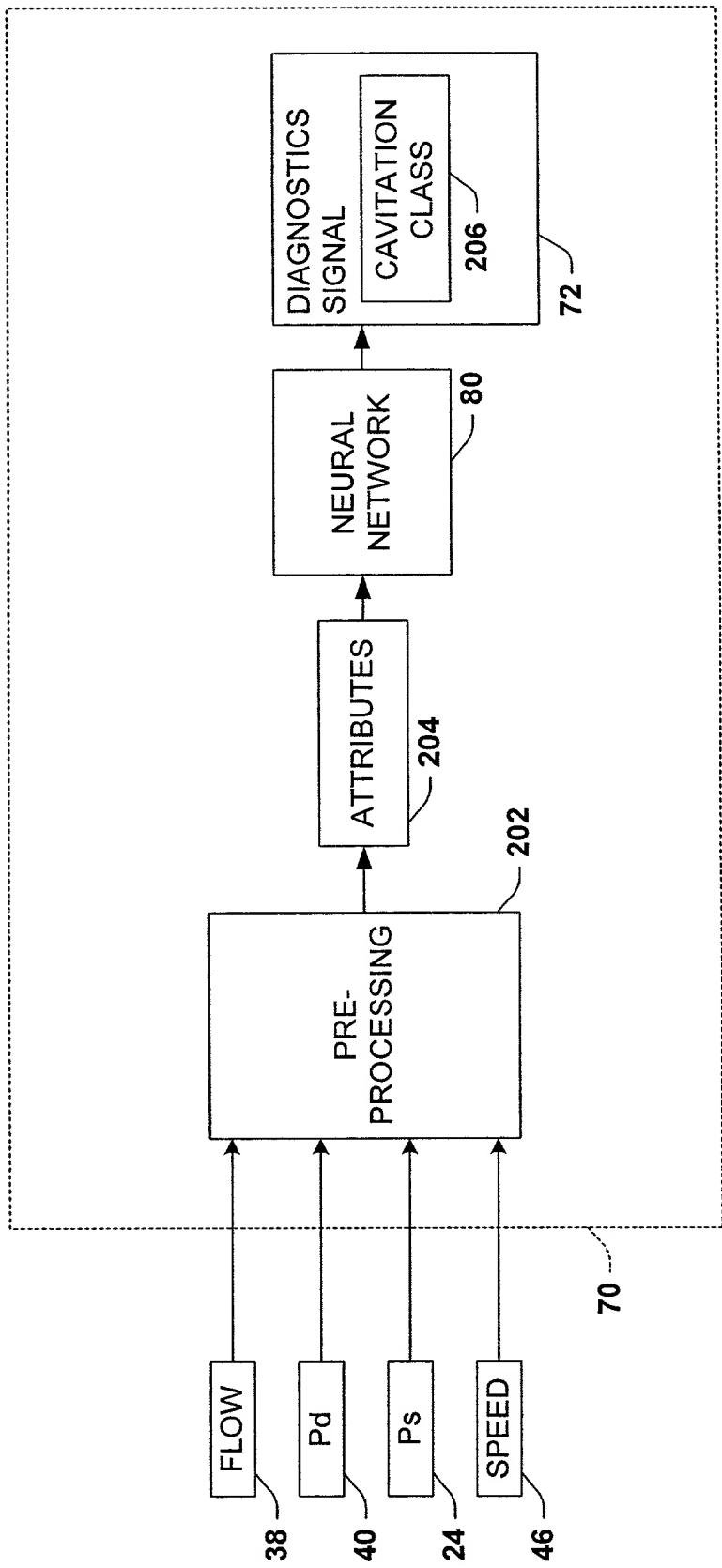


**FIG. 6**



## FIG. 7

**FIG. 8**

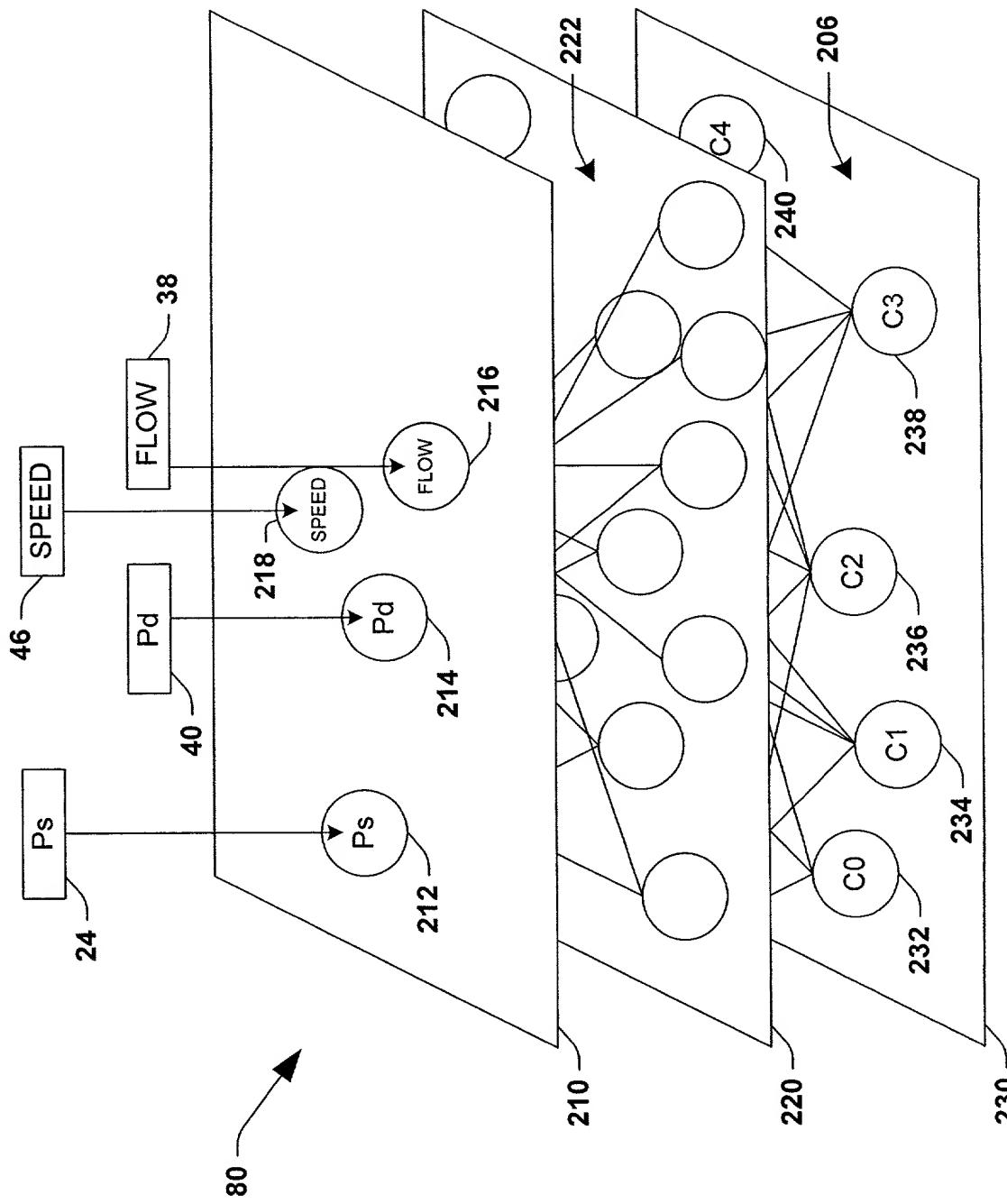


**FIG. 9**

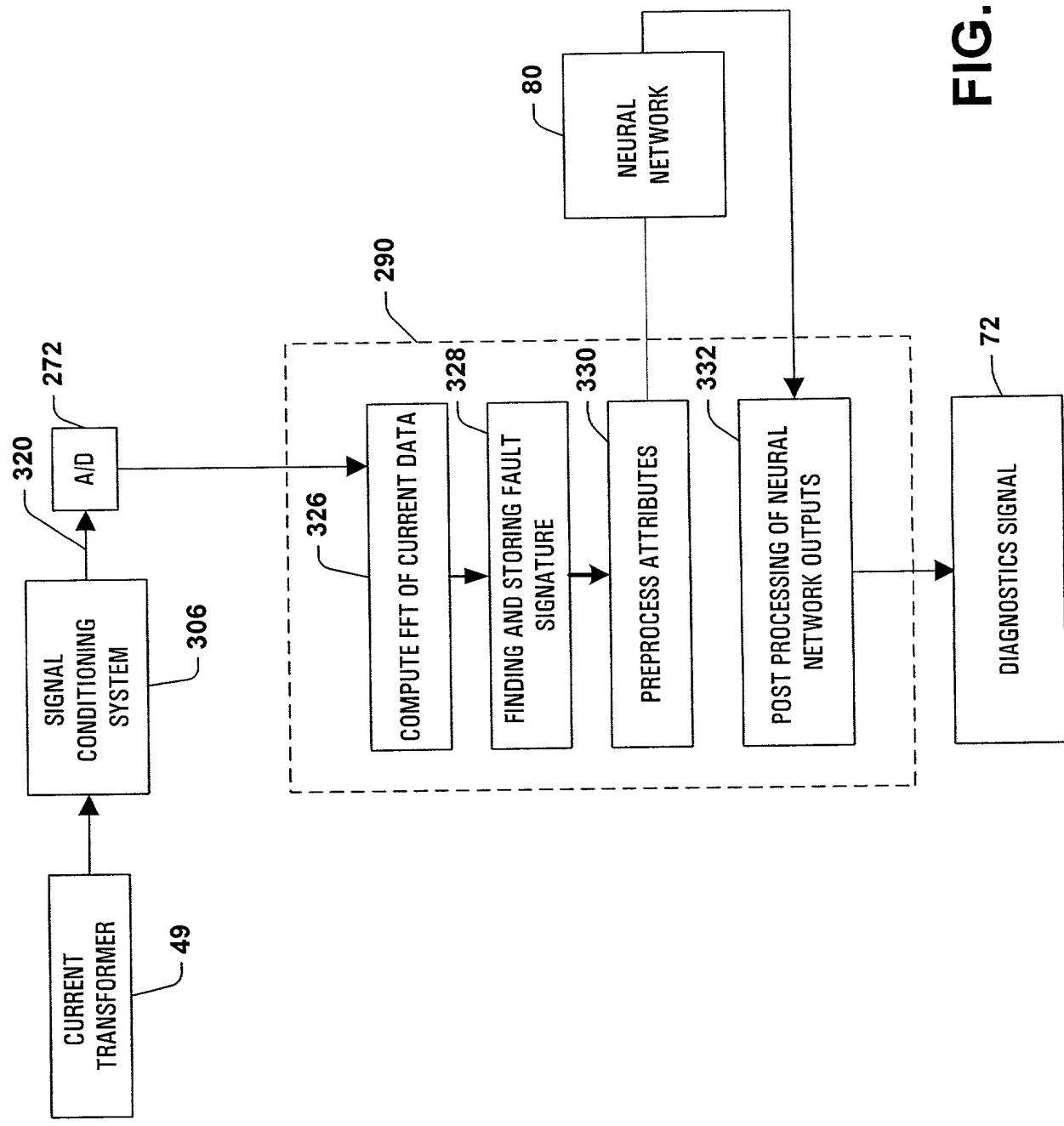
DIAGNOSTICS SIGNAL	
CLASS 0	normal; no cavitation
CLASS 1	incipient cavitation; mainly balance hole cavitation
CLASS 2	medium cavitation; mainly vane cavitation
CLASS 3	full cavitation; large amount of bubbles on the suction eye but no surging
CLASS 4	surging cavitation; full blown cavitation with surging

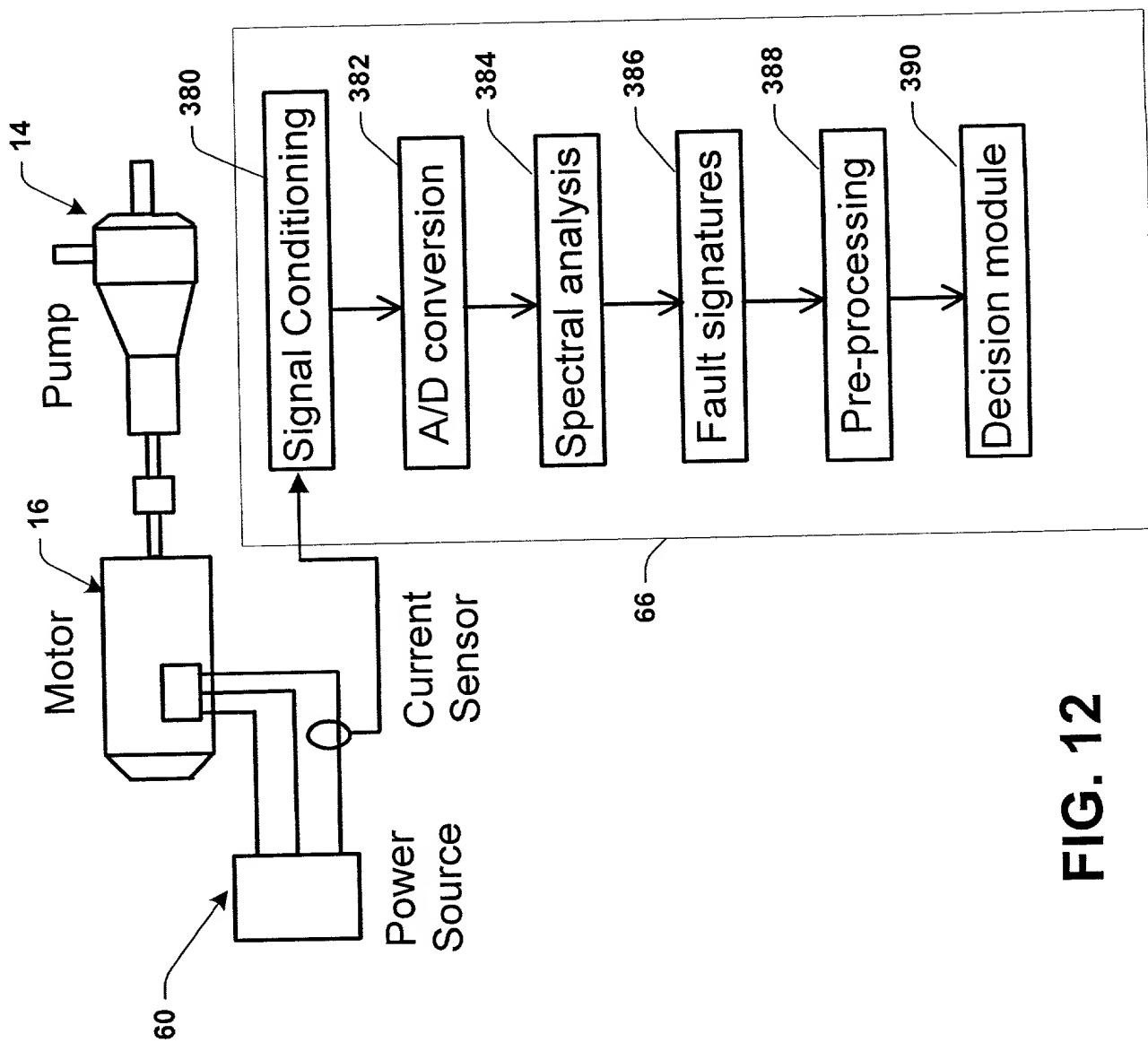
206

72



**FIG. 10**

**FIG. 11**



**FIG. 12**

326

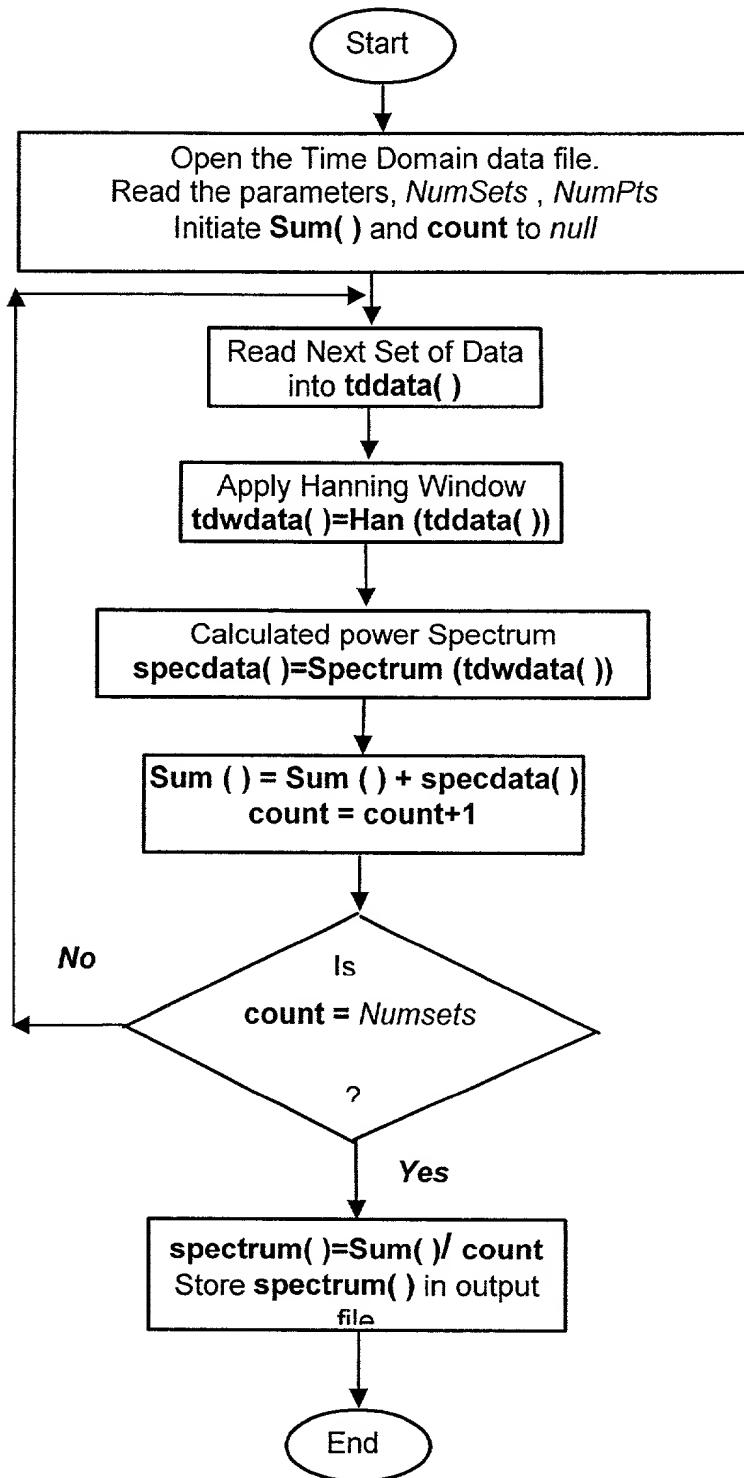
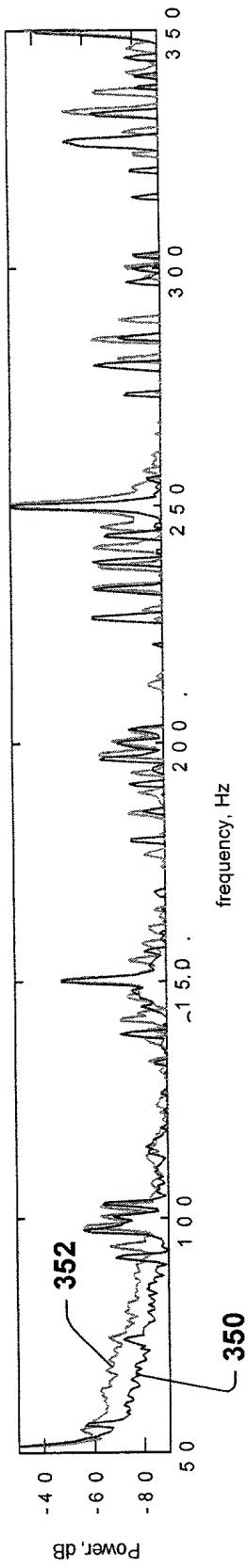
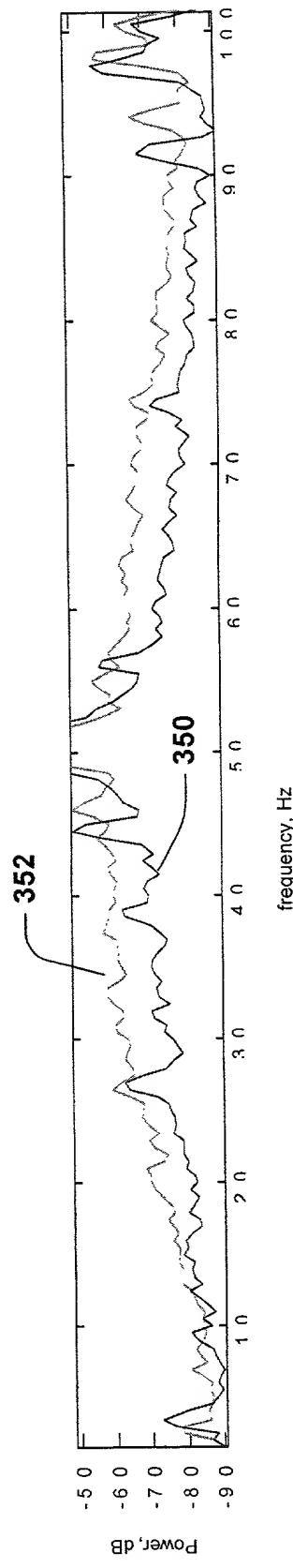


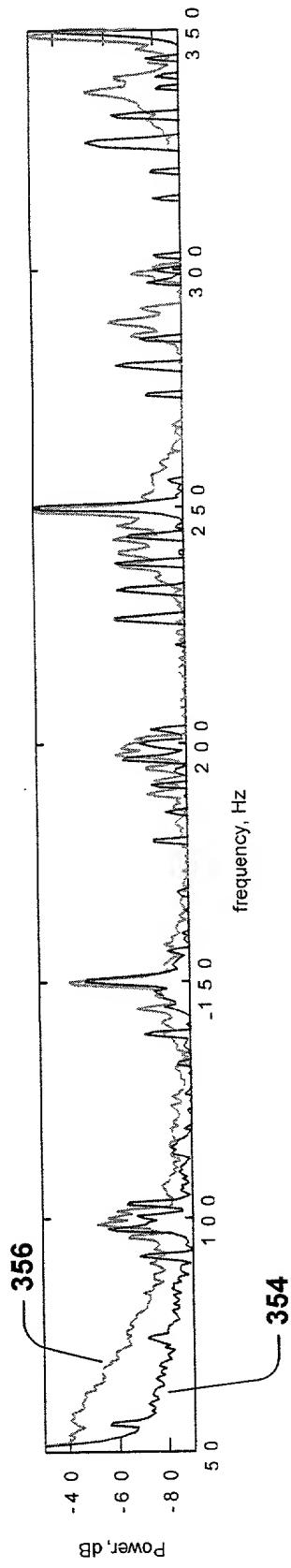
FIG. 13



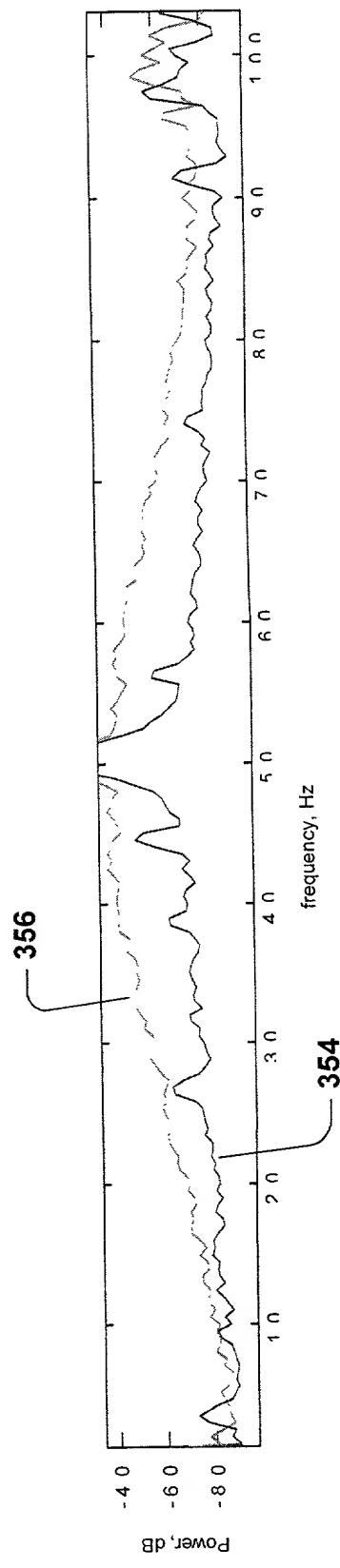
**Fig. 14a**



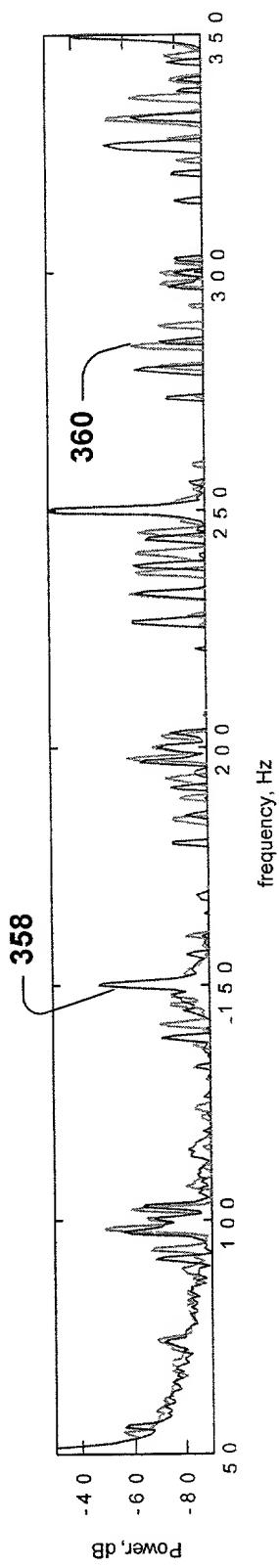
**Fig. 14b**



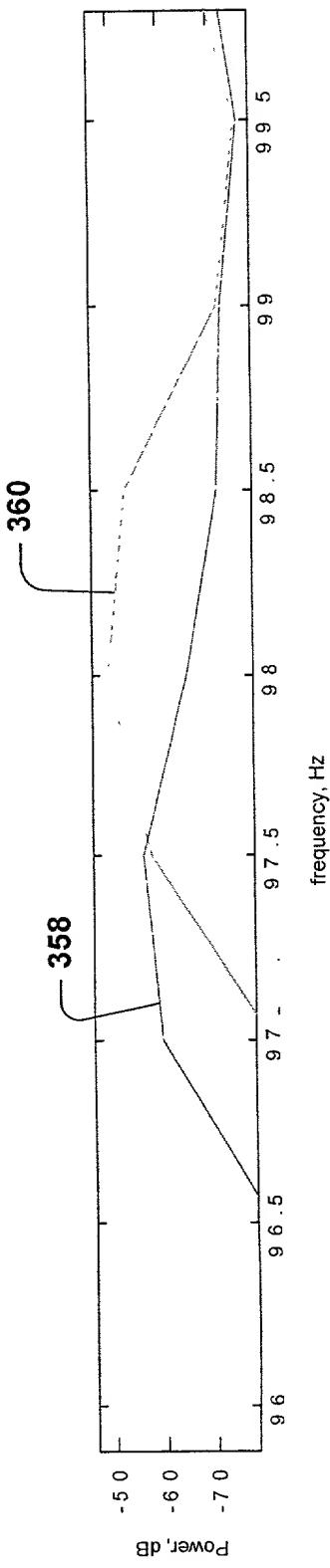
**Fig. 14c**



**Fig. 14d**



**Fig. 14e**



**Fig. 14f**

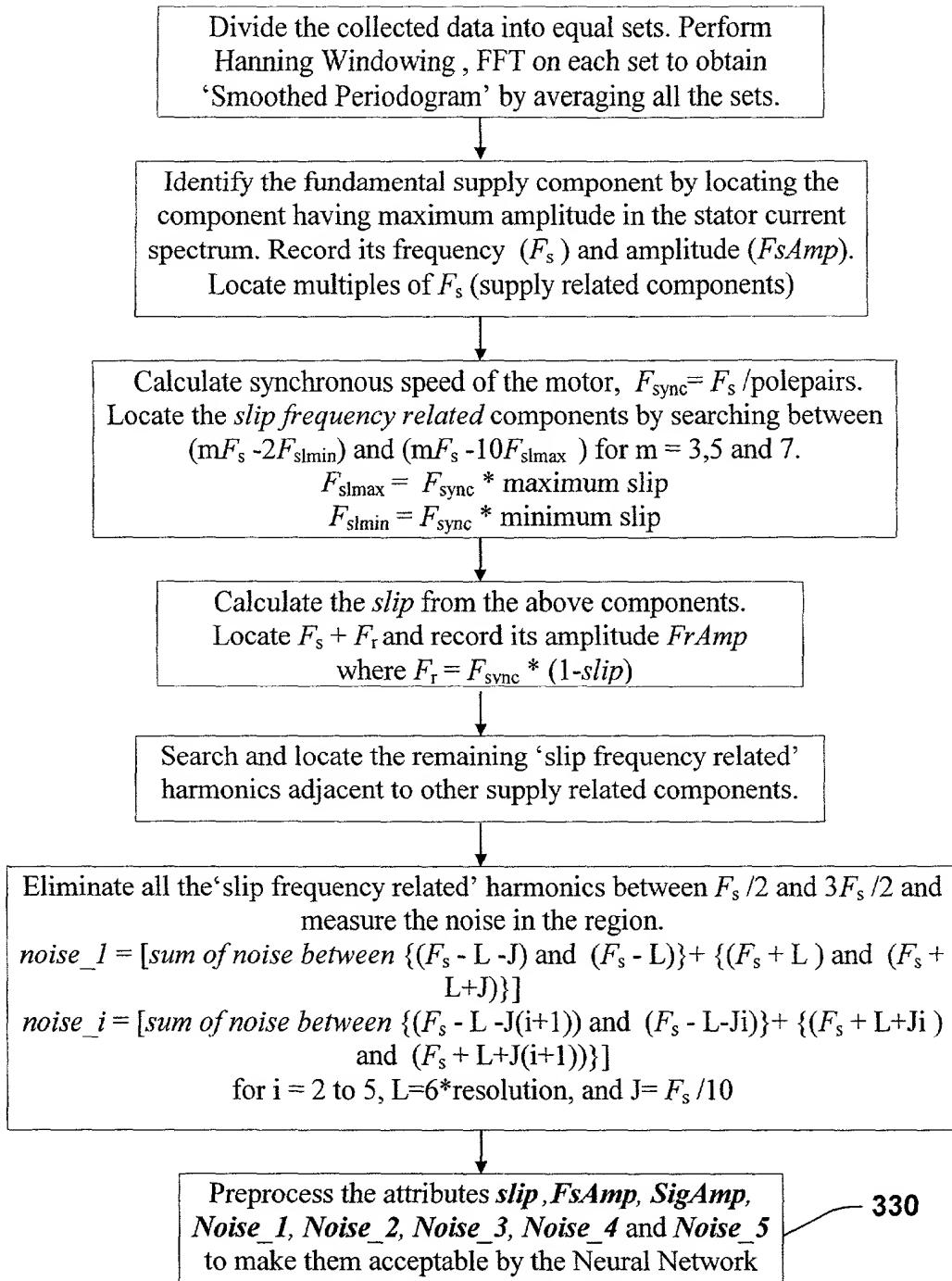
400

402

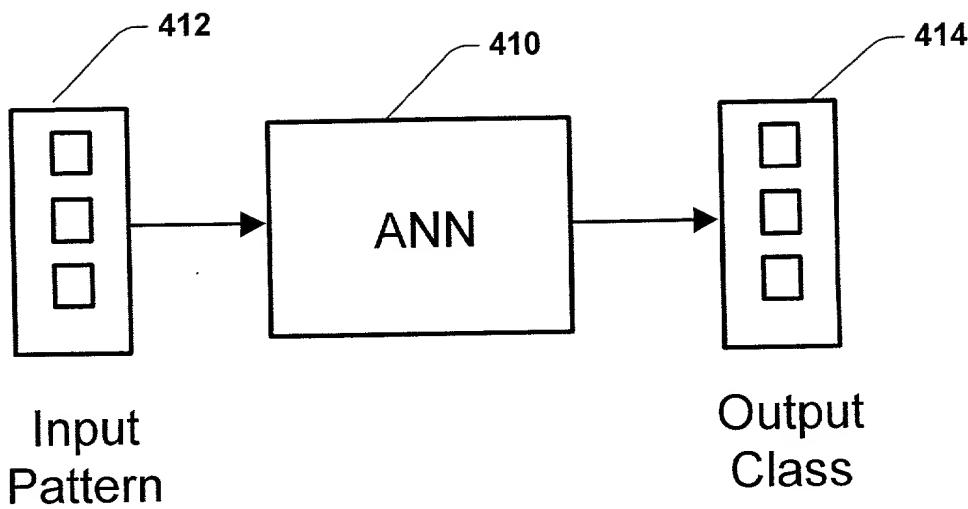
404

$f_0$	$f_1$	$f_2$	$f_3$	$f_4$	$\dots$	$f_n$
$A_3$	$A_{34}$	$A_{67}$	$A_{78}$	$A_{84}$	$\bullet$	$\bullet$
$A_{34}$	$A_{68}$	$A_{90}$	$A_{-65}$	$A_{45}$	$\bullet$	$\bullet$
$A_{56}$	$A_{45}$	$A_{46}$	$A_{56}$	$A_{78}$	$\bullet$	$\bullet$
$A_{-23}$	$A_{45}$	$A_7$	$A_{90}$	$A_{12}$	$\bullet$	$\bullet$
$A_{67}$	$A_{36}$	$A_3$	$A_{45}$	$A_{47}$	$\bullet$	$\bullet$
$A_{78}$	$A_{67}$	$A_{12}$	$A_{67}$	$A_{37}$	$\bullet$	$\bullet$
$A_{234}$	$A_{27}$	$A_{478}$	$A_{24}$	$A_{127}$	$\bullet$	$\bullet$
$A_{-98}$	$A_{78}$	$A_{26}$	$A_{12}$	$A_{128}$	$\bullet$	$\bullet$
$A_{26}$	$A_{96}$	$A_{83}$	$A_{56}$	$A_{234}$	$\bullet$	$\bullet$
$A_4$	$A_{32}$	$A_{187}$	$A_{56}$	$A_{34}$	$\bullet$	$\bullet$
$A_0$	$A_{16}$	$A_{73}$	$A_{76}$	$A_{33}$	$\bullet$	$\bullet$
$A_{75}$	$A_{17}$	$A_{45}$	$A_{69}$	$A_{44}$	$\bullet$	$\bullet$

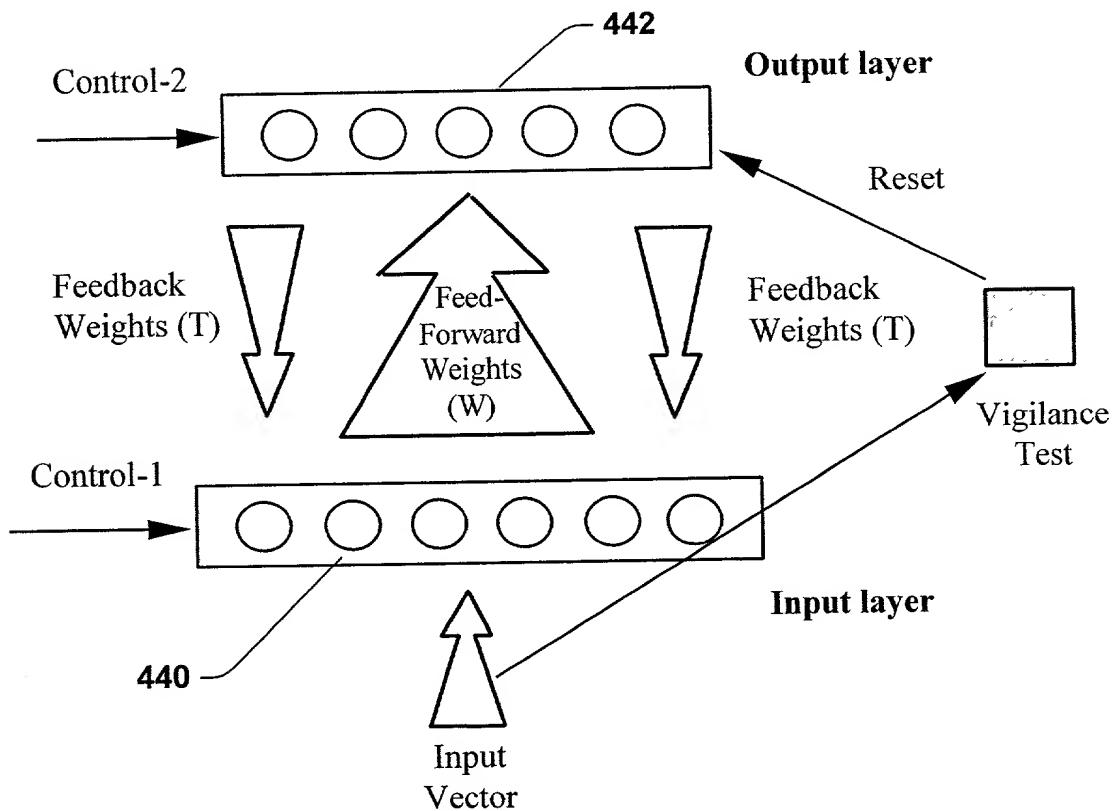
FIG. 14g



**FIG. 15**

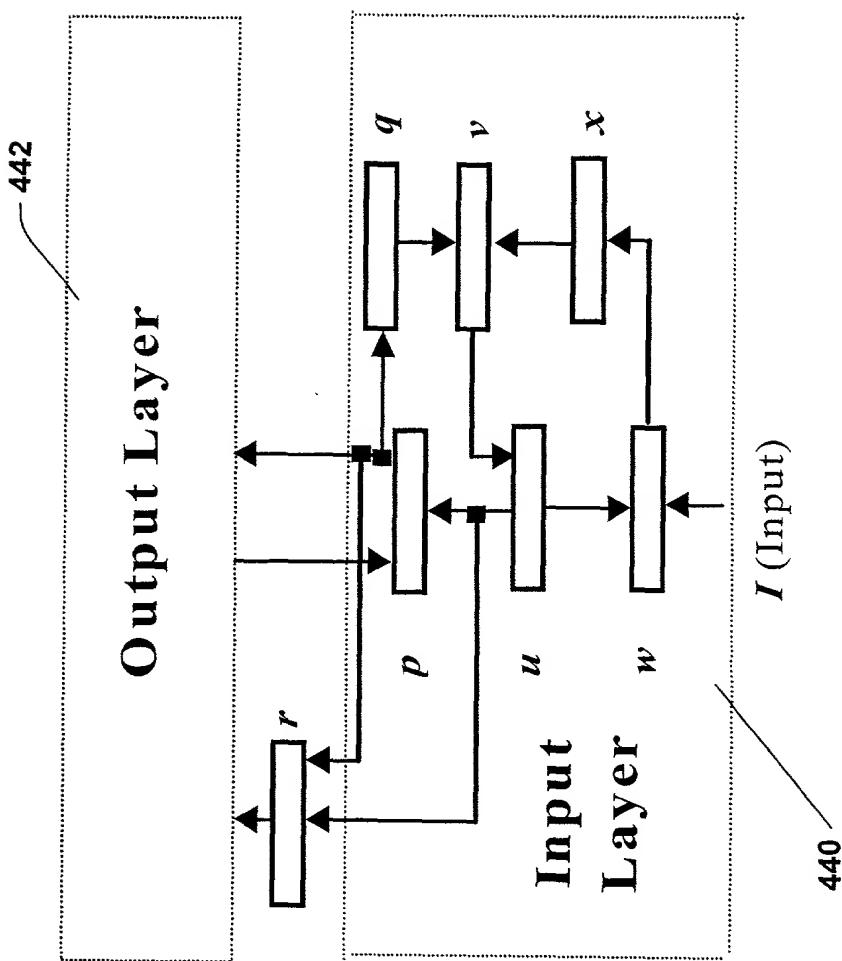


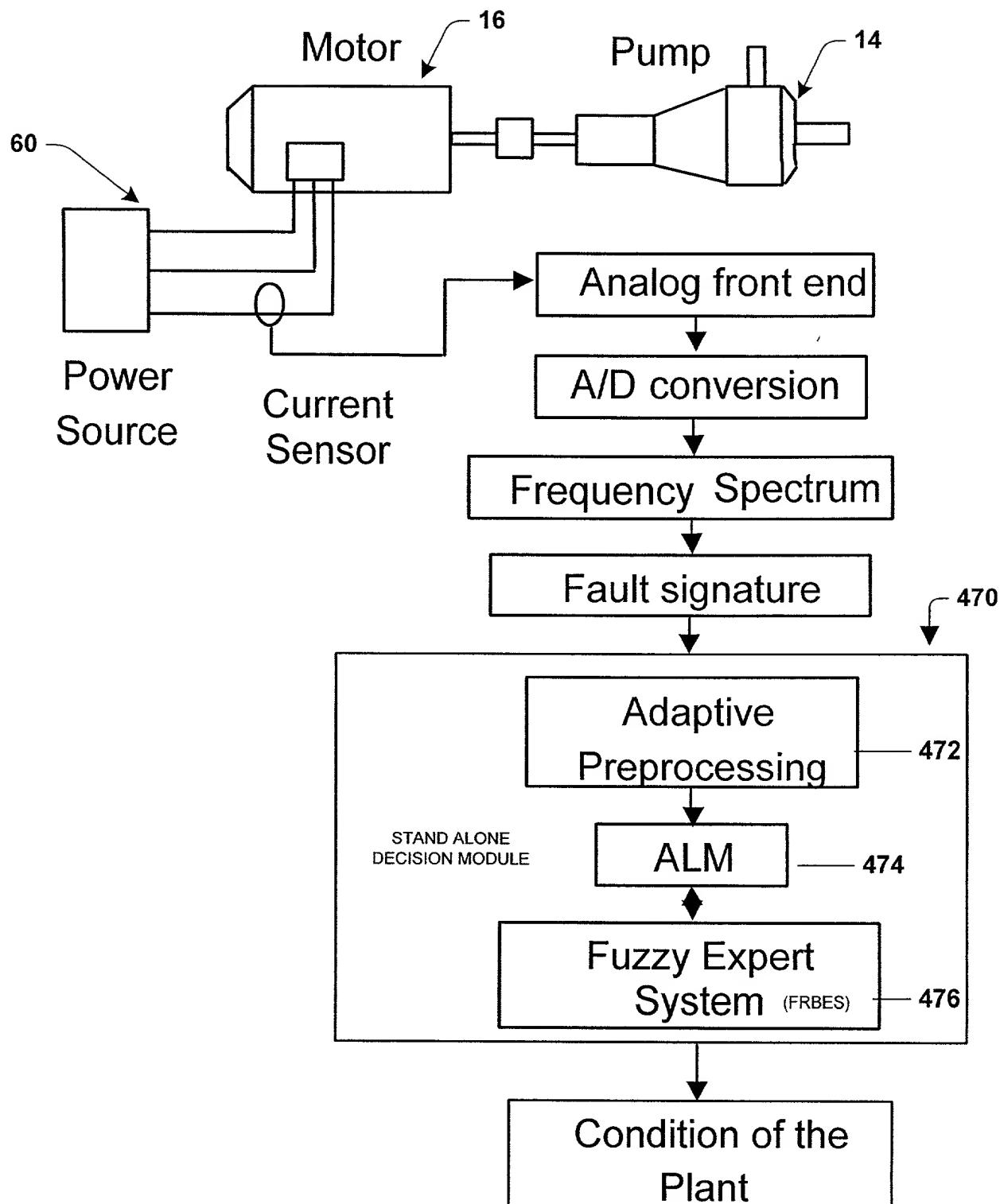
**Fig. 16**



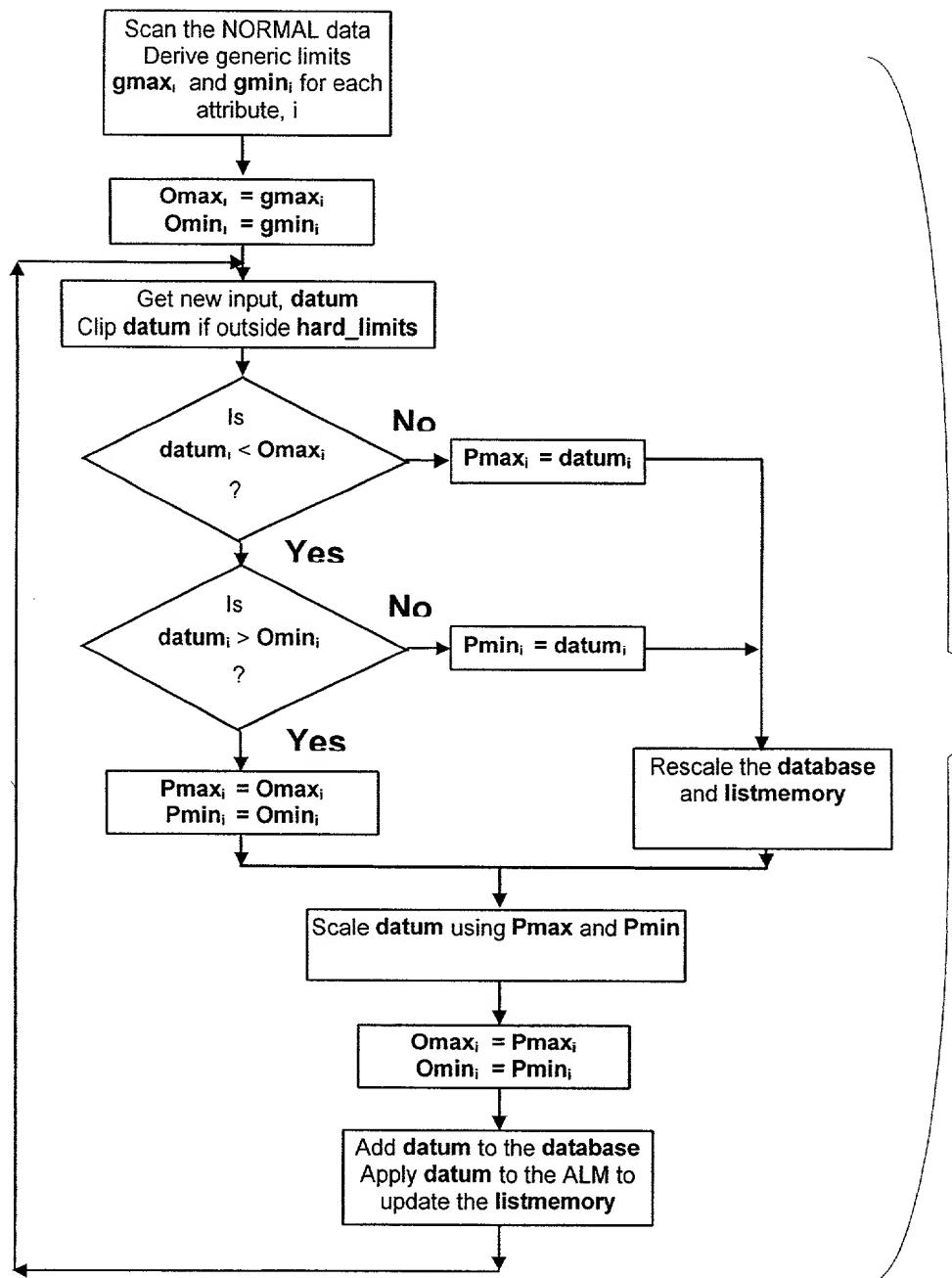
**Fig. 17**

Fig. 18



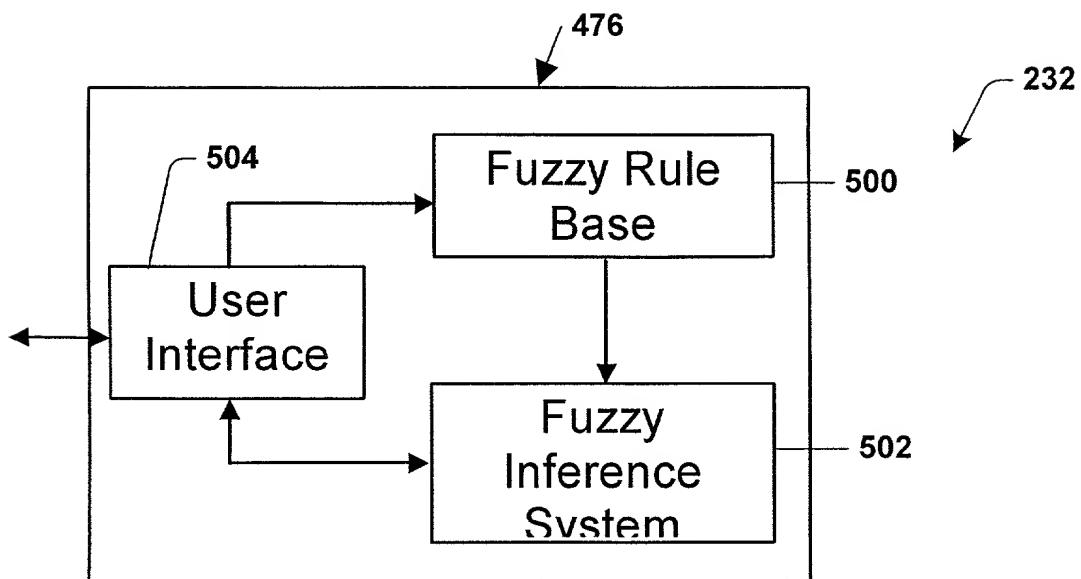


**Fig. 19**

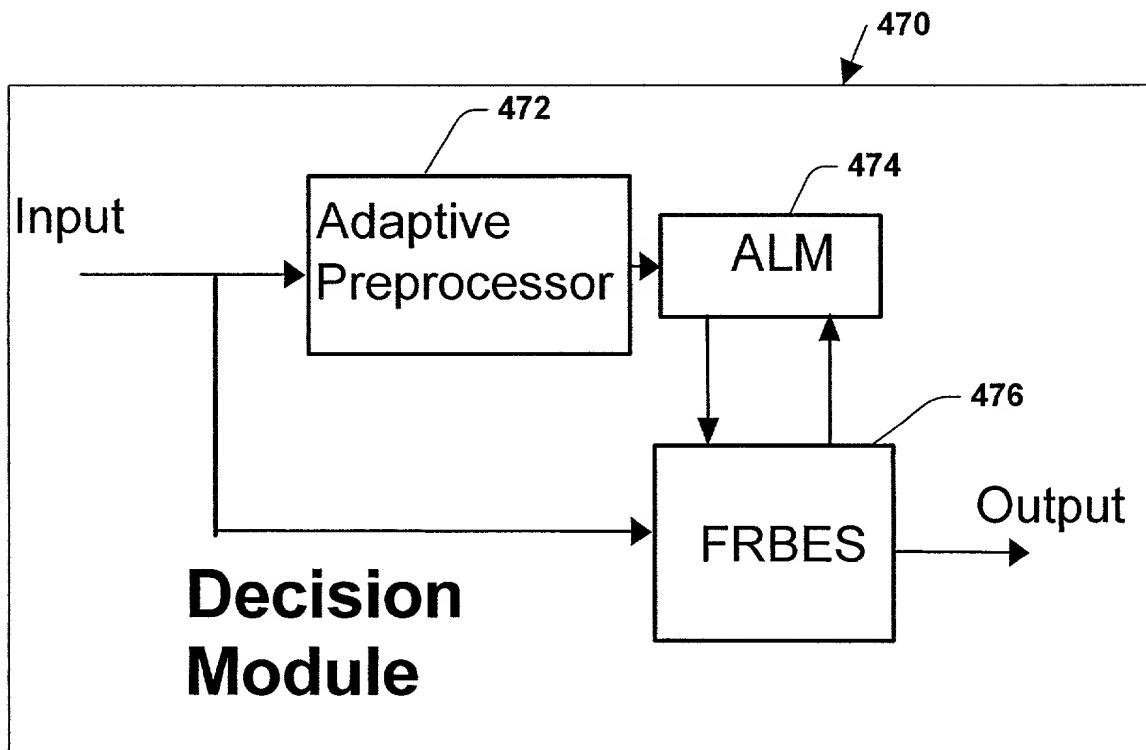


472

Fig. 20



**Fig. 21**

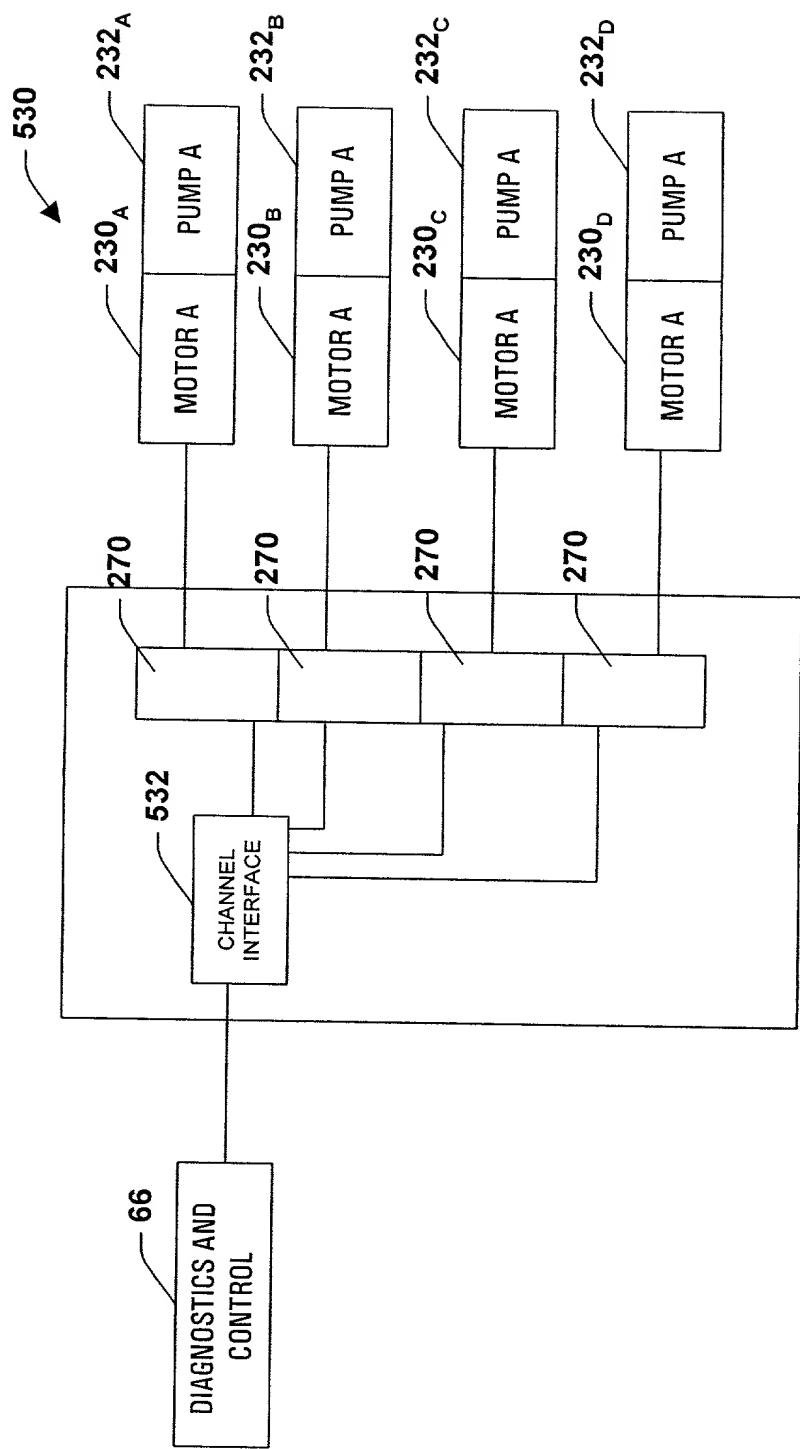


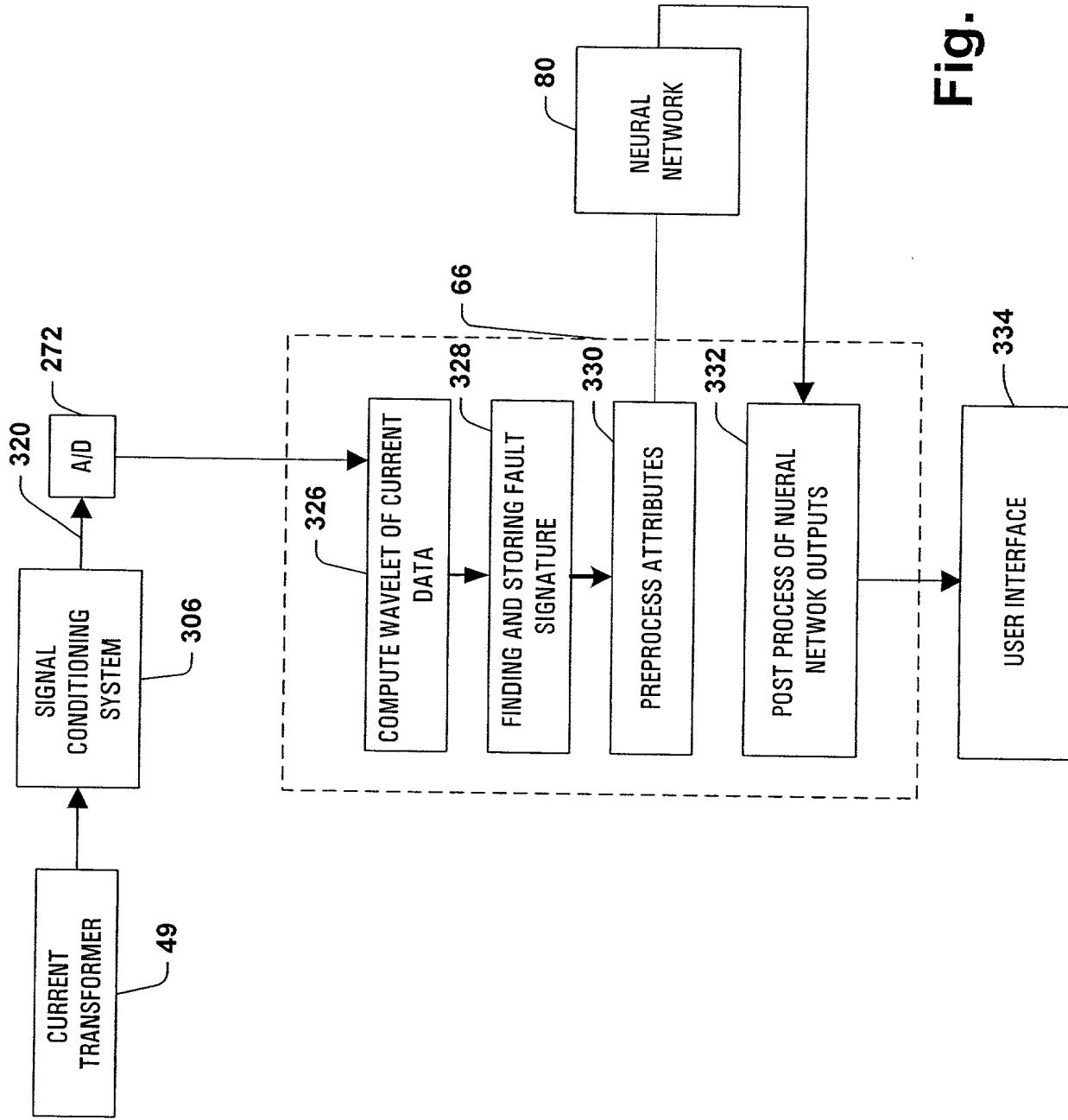
**Fig. 22**

```
IF all the attributes are NORMAL THEN condition is normal
IF slip is SLLO and noise_2 is HI THEN condition is low-cav
IF noise_4 and noise_5 are VERHI THEN condition is sev-cav
IF noise_4 and noise_5 are HI THEN condition is sev-cav
IF FsAmp is SLLO and noise_5 are SLHI THEN condition is sev-cav
IF FsAmp is LO and noise_5 is SLHI THEN condition is sev-cav
IF FsAmp is VERLO and noise_5 is SLHI THEN condition is sev-cav
IF FsAmp is SLLO and noise_4 are HI THEN condition is sev-cav
IF FsAmp is LO and noise_4 are HI THEN condition is sev-cav
IF FsAmp is LO and noise_4 is VERHI THEN condition is sev-cav
IF FsAmp is SLLO and noise_4 is NORMAL THEN condition is low-
block
IF FsAmp is LO and noise_4 is NORMAL and noise_5 is NORMAL THEN condition is sev-block
IF slip and FsAmp are VERLO THEN condition is sev-block
IF FAmp is HI THEN condition is impel-fault
IF framp is VERHI THEN condition is impel-fault
```

## Fig. 23

**Fig. 24**





**Fig. 25**

600

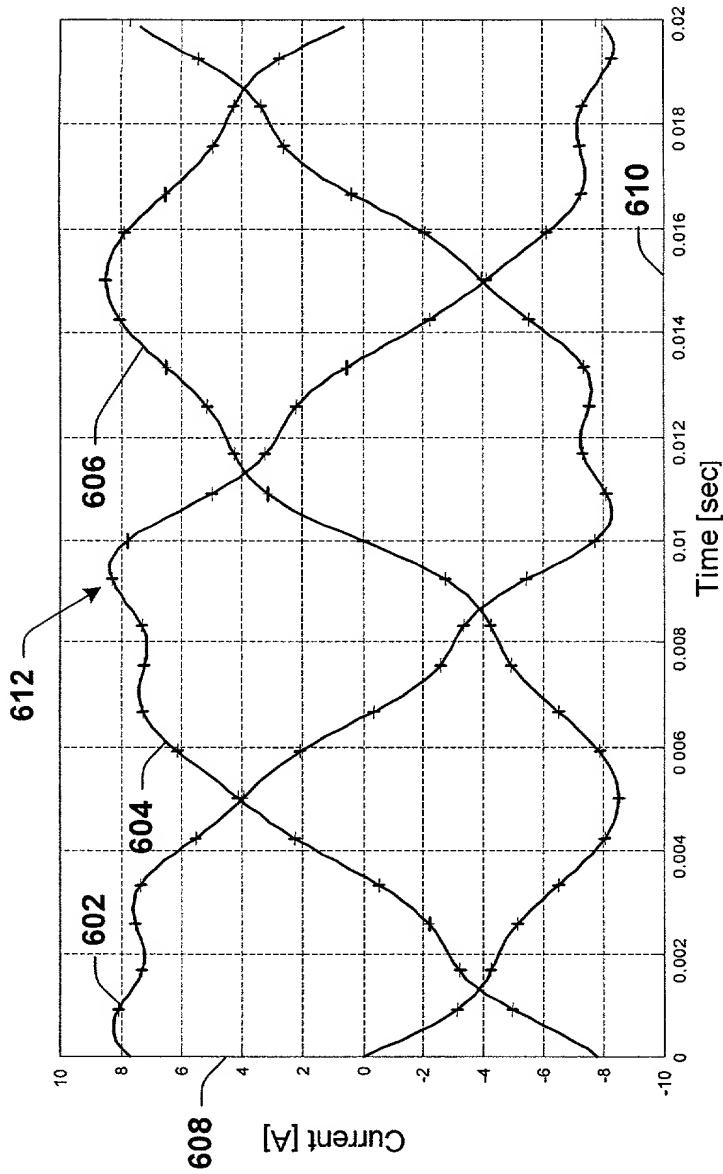


FIG. 26

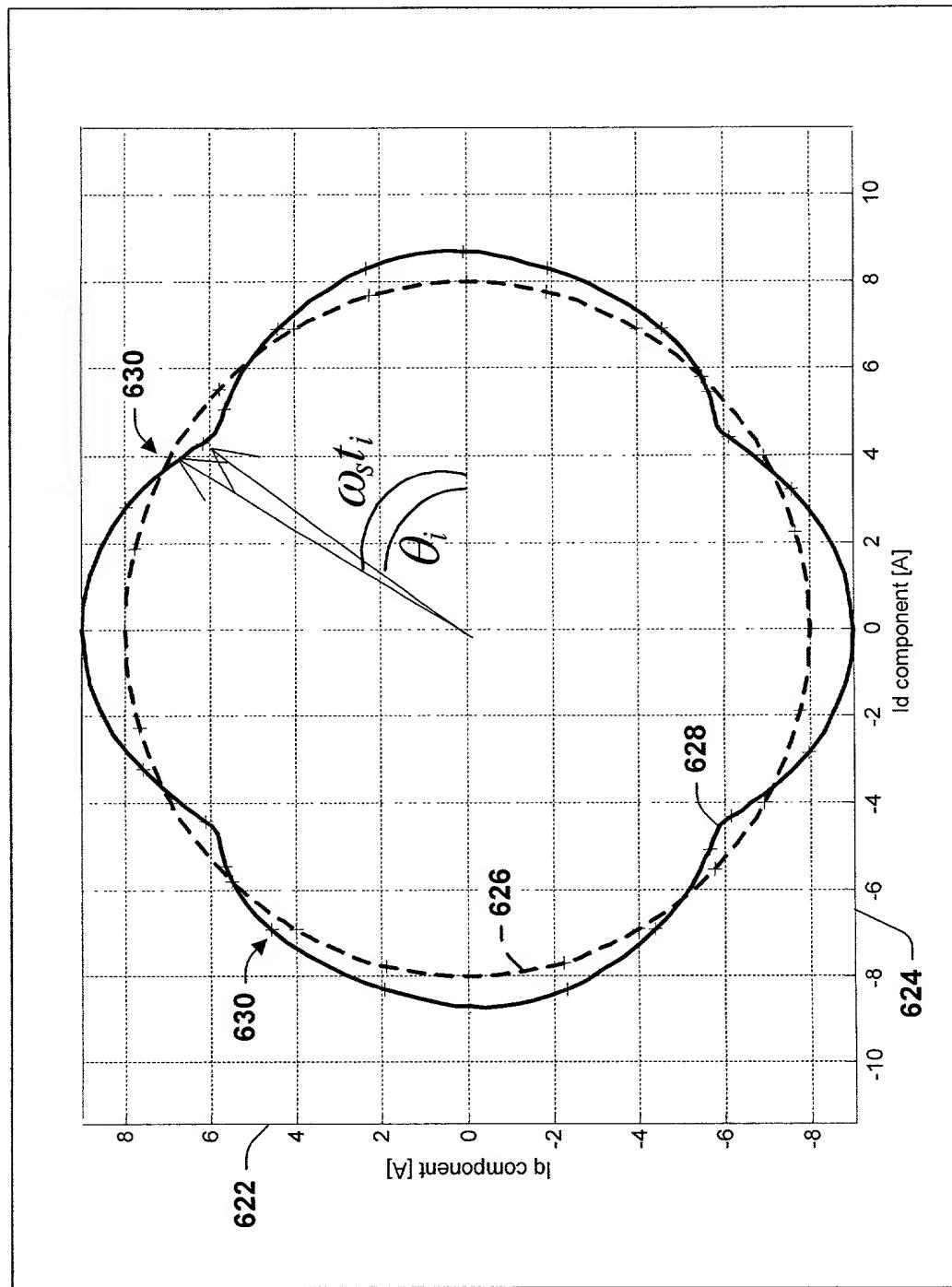


FIG. 27

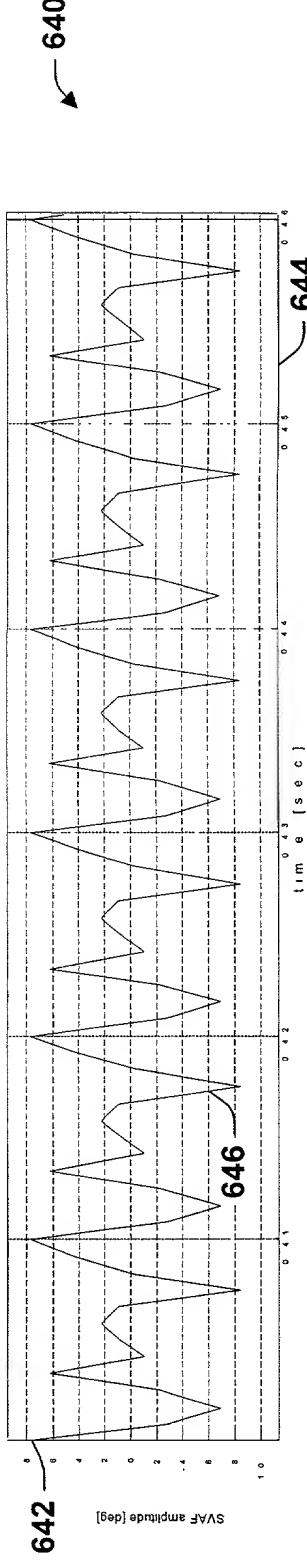


FIG. 28

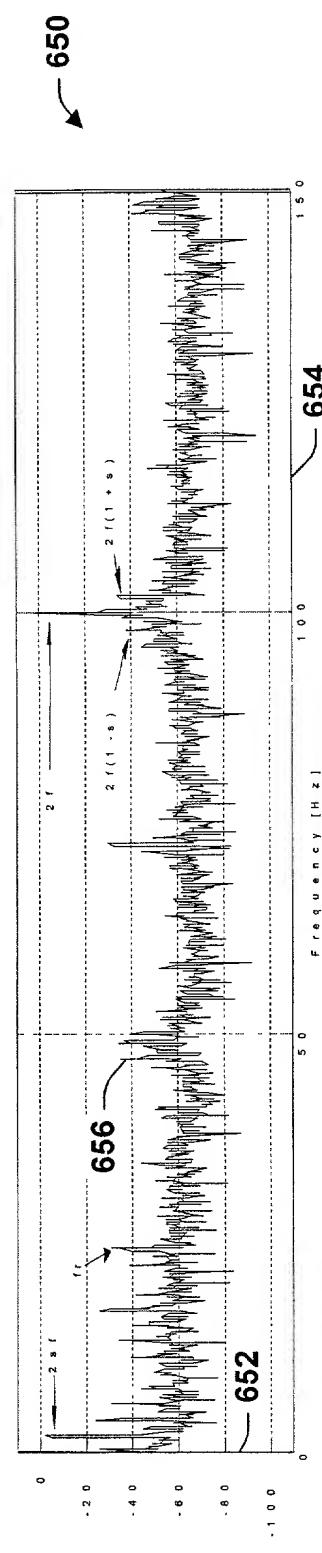
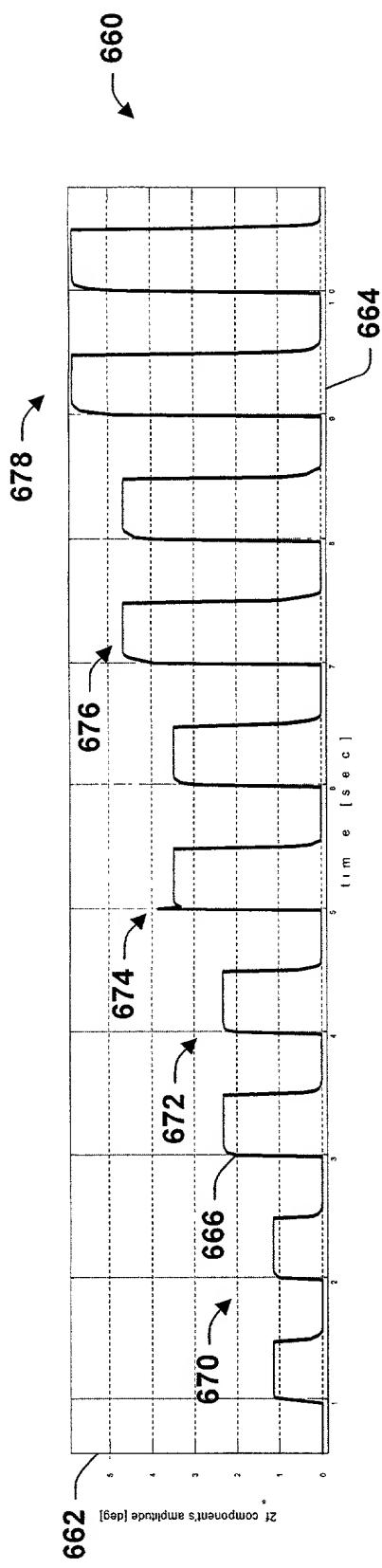
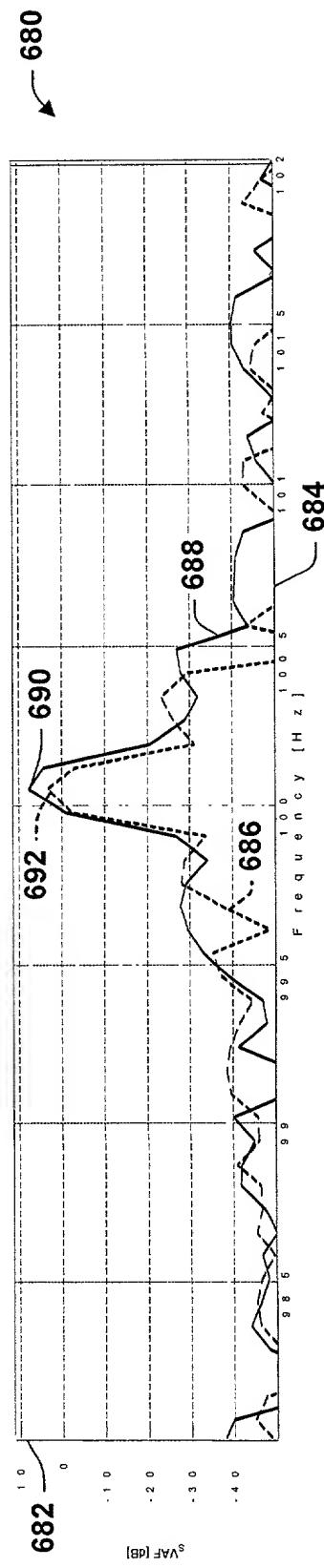


FIG. 29



**FIG. 30**



**FIG. 31**

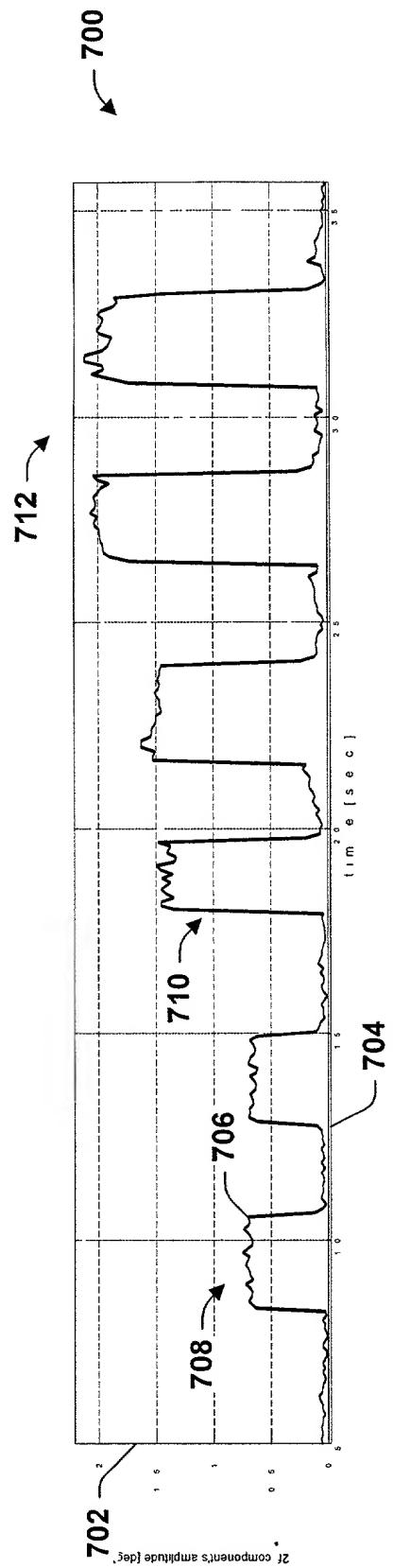


FIG. 32

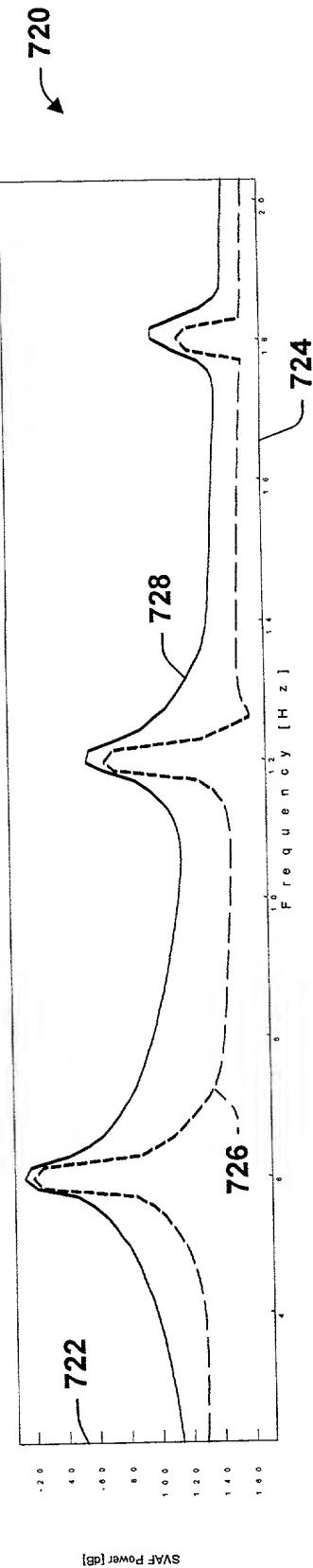


FIG. 33

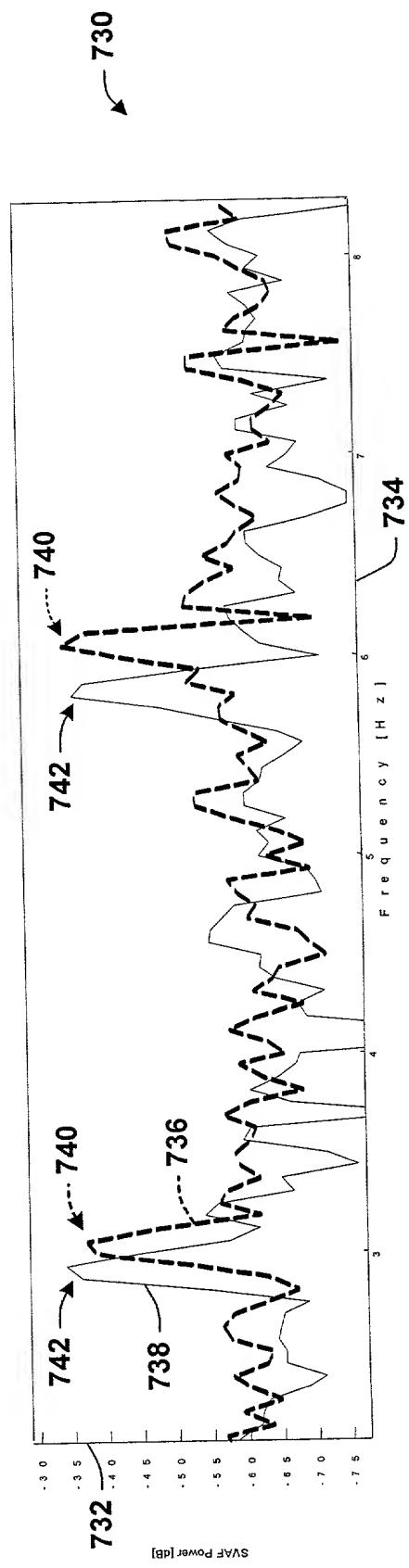


FIG. 34

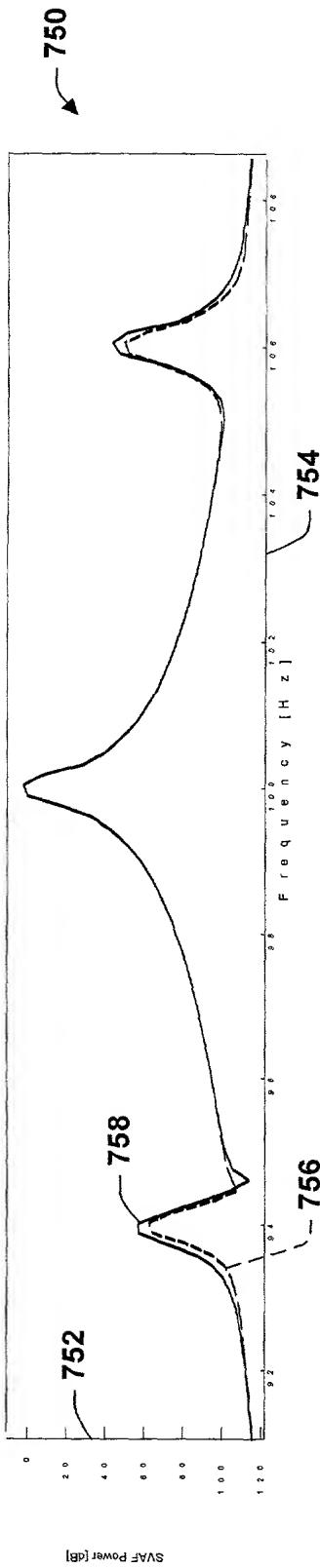


FIG. 35

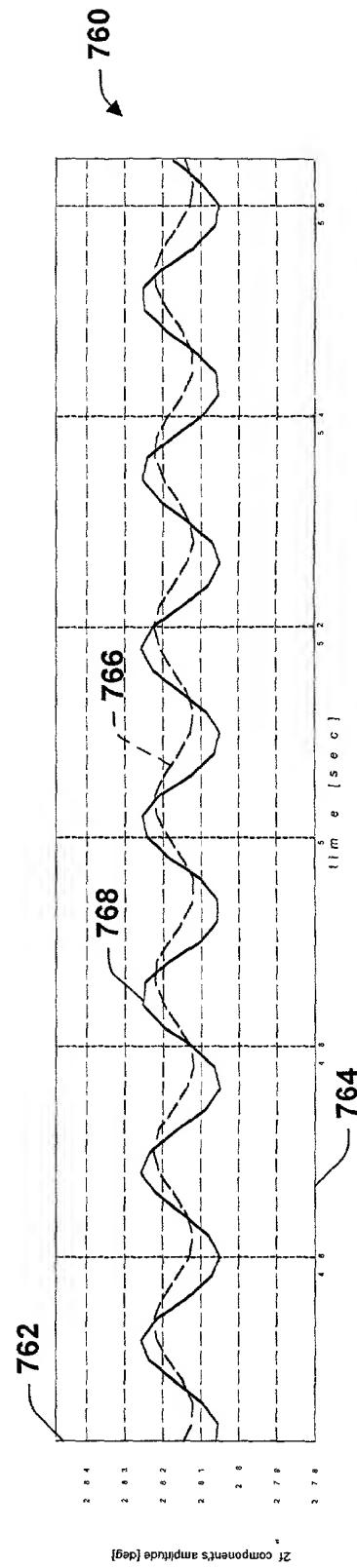
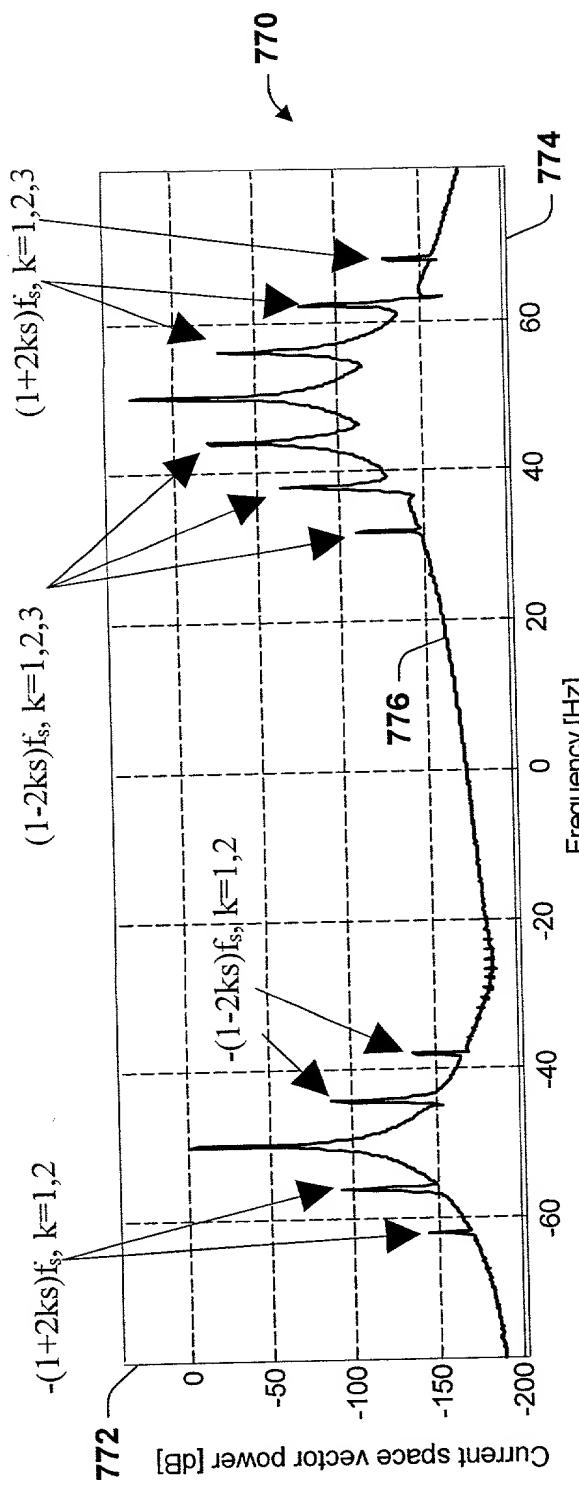
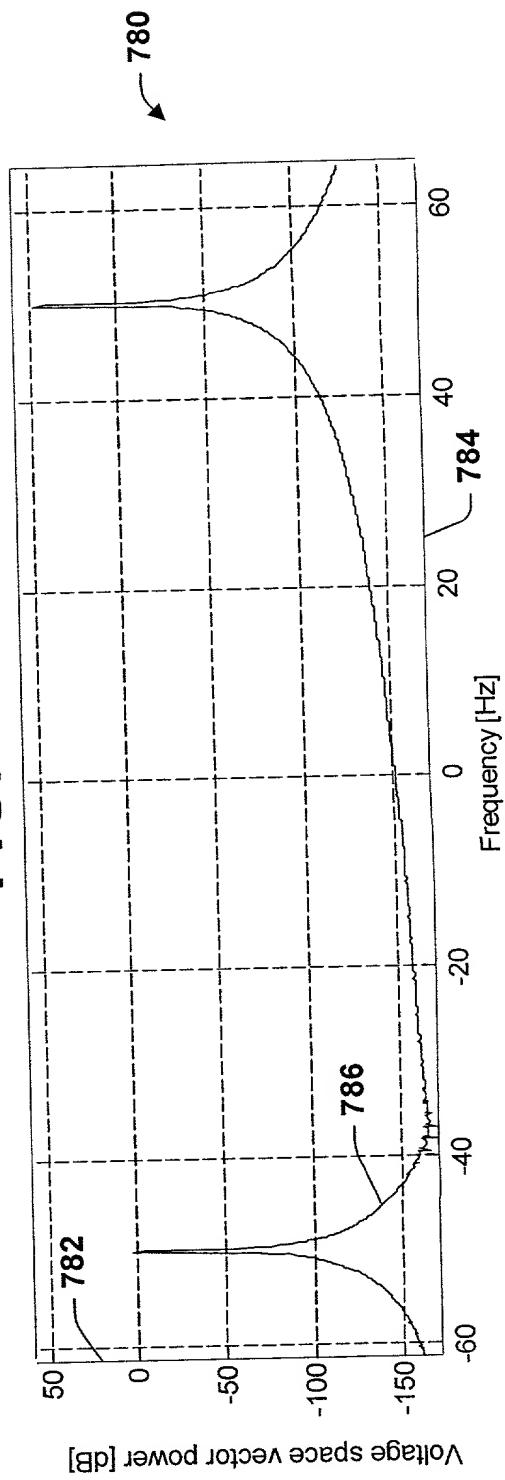


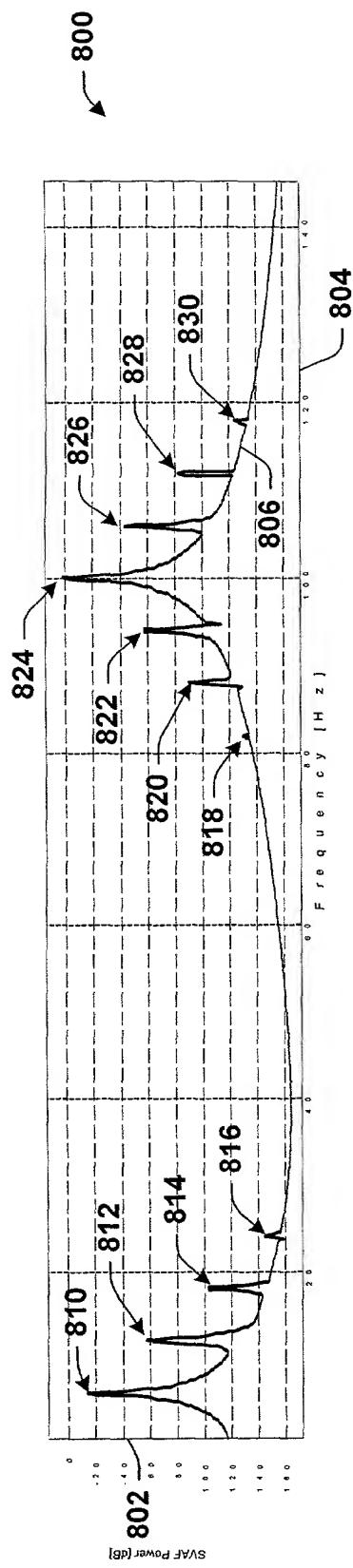
FIG. 36



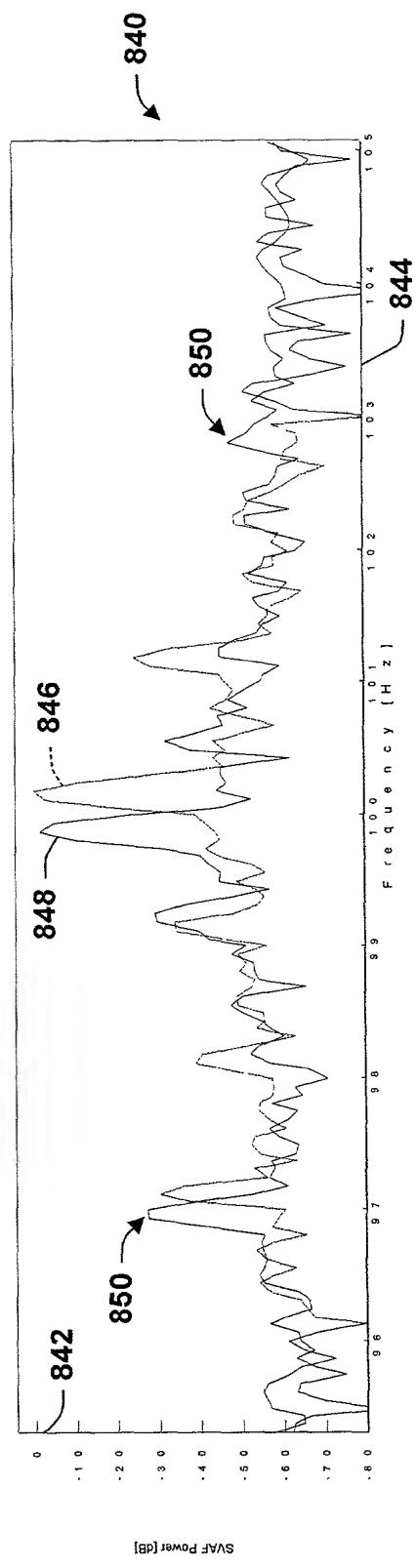
**FIG. 37**



**FIG. 38**



**FIG. 39**



**FIG. 40**

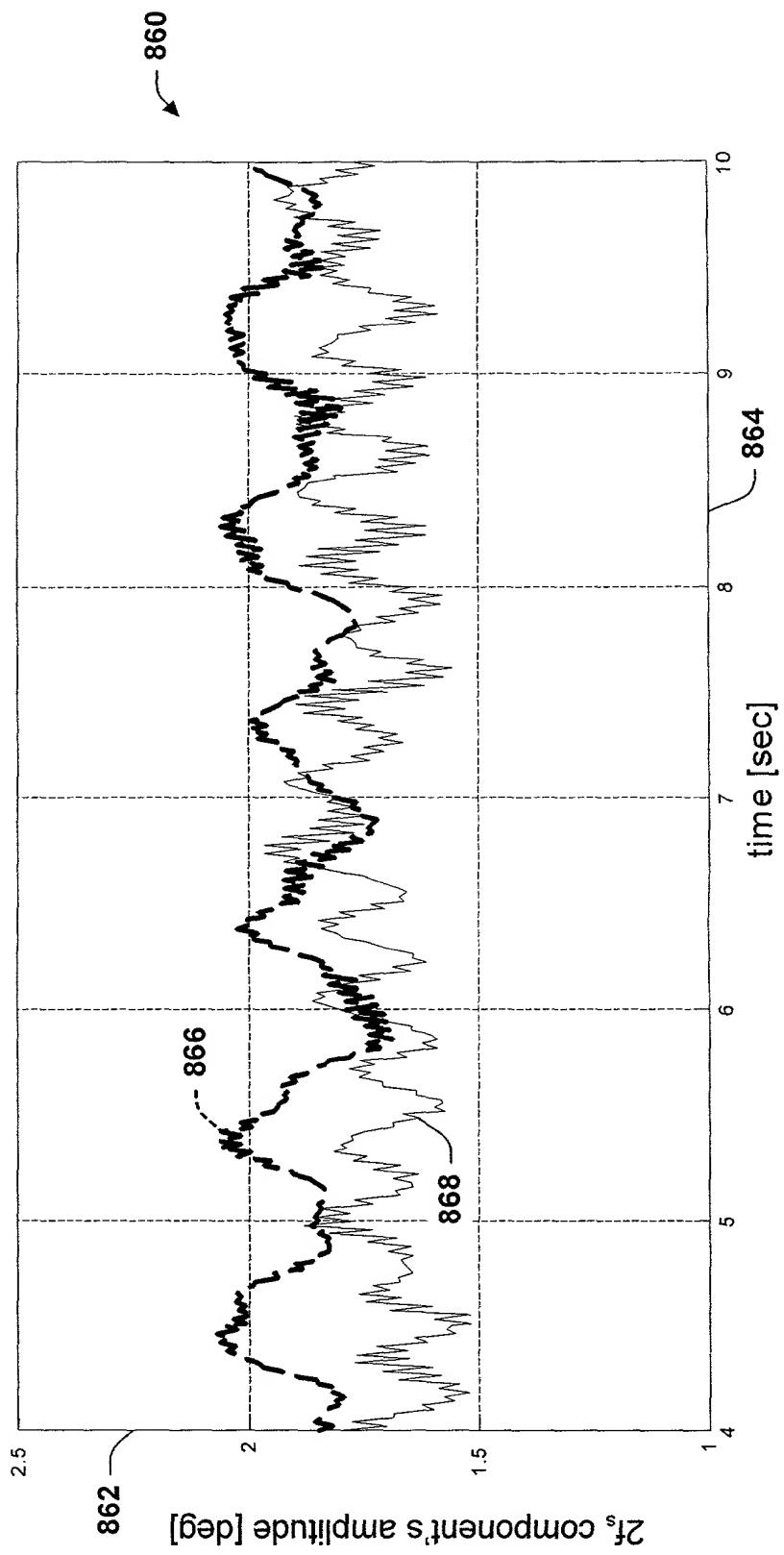
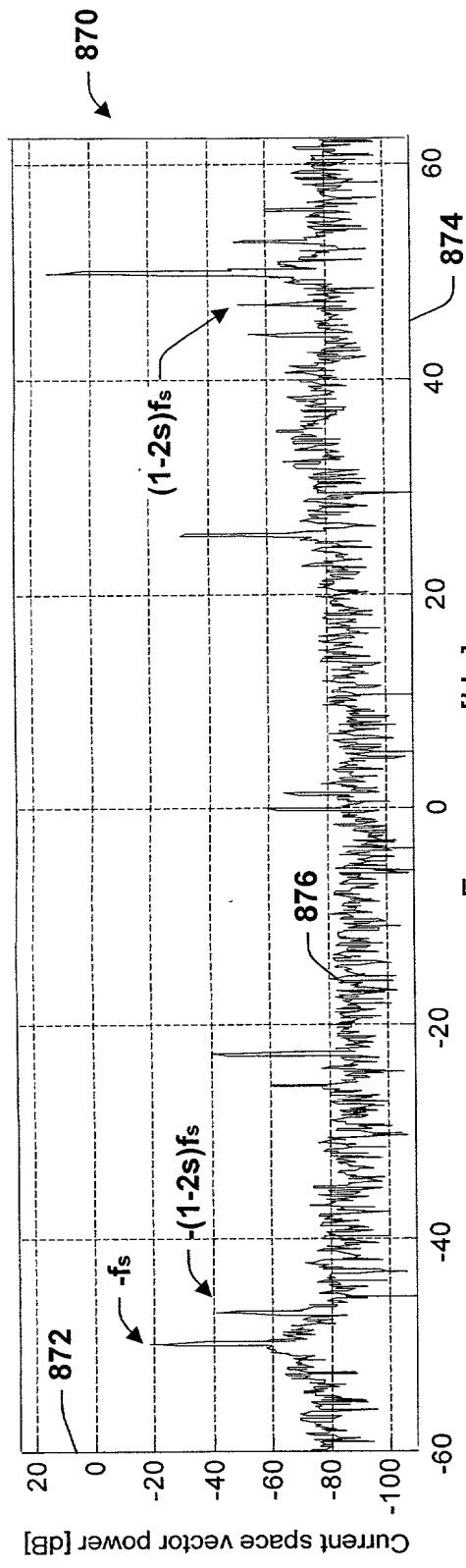
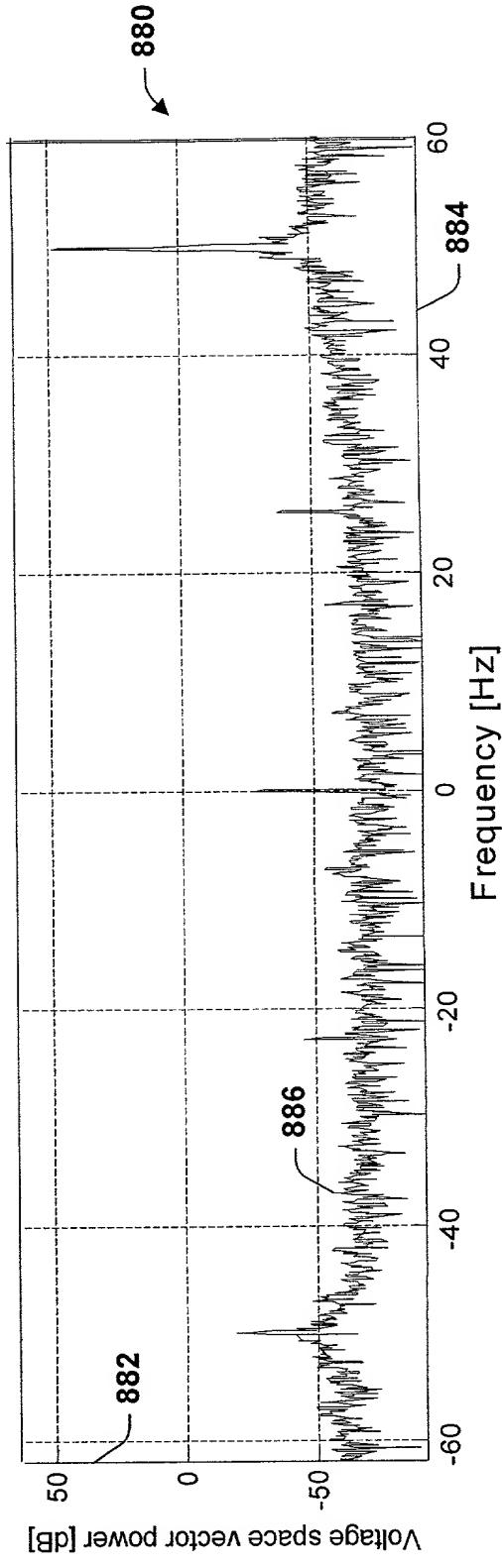


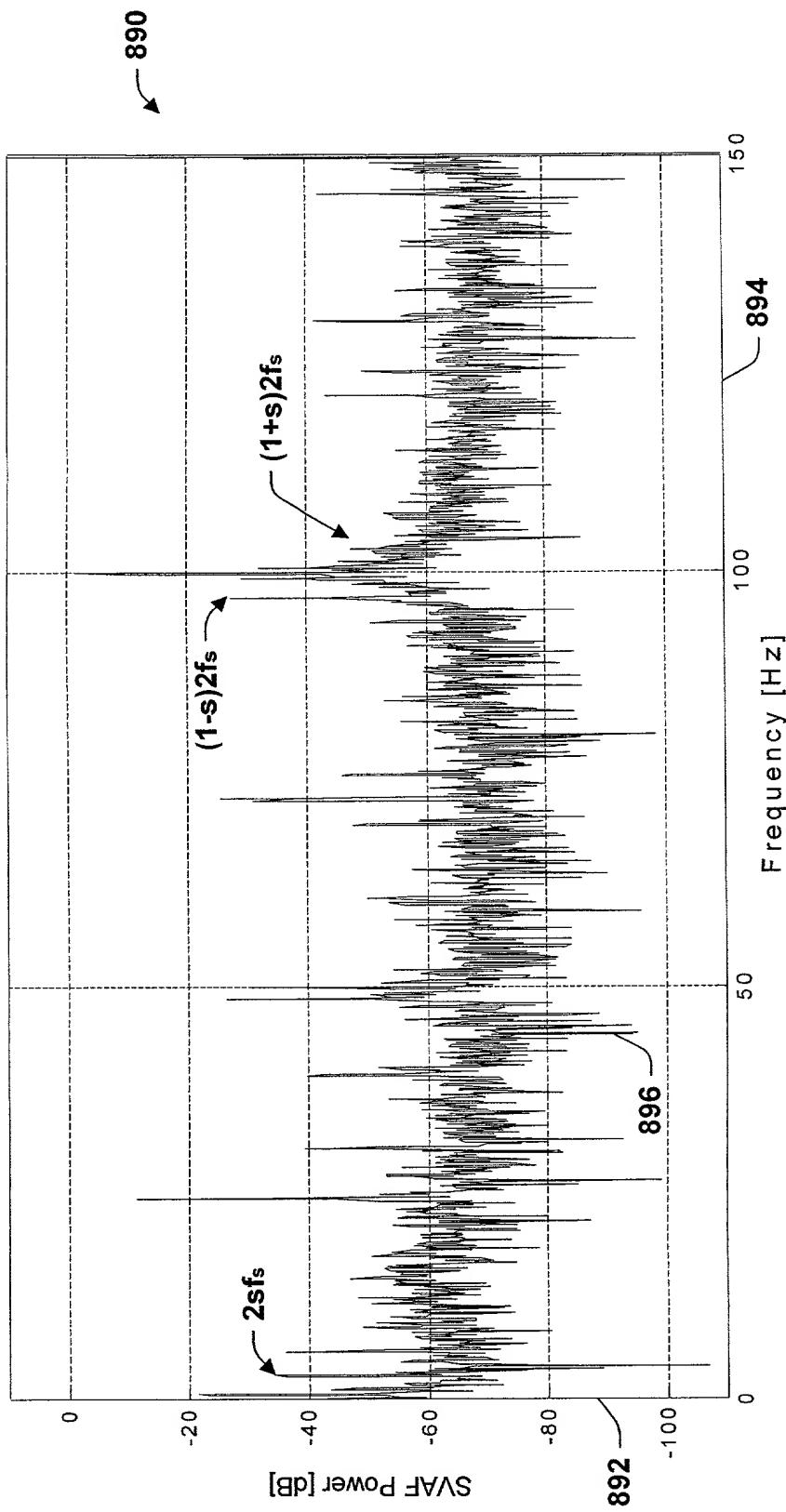
FIG. 41



**FIG. 42**



**FIG. 43**



**FIG. 44**